193 FERC ¶ 62,119

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Bear Swamp Power Company, LLC Project No. 2669-089

ORDER ISSUING NEW LICENSE

(Issued November 26, 2025)

Introduction

1. On March 30, 2018, Bear Swamp Power Company, LLC (Bear Swamp Power) filed, pursuant to Part I of the Federal Power Act (FPA),[1] an application for a new license to continue operating and maintaining the 676-megawatt (MW) Bear Swamp Project No. 2669 (Bear Swamp Project or project). The project consists of two developments: the Bear Swamp Pumped Storage Development (Bear Swamp PSD) that has an authorized capacity of 666 MW and the Fife Brook Development that has an authorized capacity of 10 MW. The project is located on the Deerfield River, in Berkshire and Franklin Counties, Massachusetts.[2]

2. As discussed below, this order issues a new license for the Bear Swamp Project.

Background

3. The Federal Energy Regulatory Commission (Commission) issued the original license for the project on April 28, 1970, with an effective date of April 1, 1970, and an expiration date of March 31, 2020.[3] Since the expiration date, Bear Swamp Power has

[1] 16 U.S.C. §§ 791(a) – 825(r).

[2] Because the project is located on a navigable waterway of the United States, it is required to be licensed by section 23(b)(1) of the FPA. 16 U.S.C. § 817(1). *See New England Power Company*, 30 FERC ¶ 1120 (1963) (finding the Deerfield River is a navigable waterway of the United States).

[3] *New England Power Co.*, 43 FPC ¶ 568 (1970) (Original License); *New England Power Co.*, 43 FPC ¶ 785 (1970) (clarifying the effective date of license to be April 1, 1970); *New England Power Co.*, 82 FERC ¶ 62,138 (1998) (approving license transfer to USGen New England, Inc.); *USGen New England, Inc.*, 85 FERC ¶ 62,079 (1998) (approving addition of Bear Swamp Generating Trust No. 1 and Bear Swamp Generating

operated the project under an annual license pending the disposition of its license application.[4]

4. On January 30, 2019, the Commission issued a public notice that was published in the *Federal Register* accepting the application for filing, indicating the application was ready for environmental analysis, and setting March 31, 2019, as the deadline for filing motions to intervene, protests, comments, recommendations, terms and conditions, and fishway prescriptions.[5] On March 14, 2019, American Whitewater, Appalachian Mountain Club, New England FLOW, Zoar Outdoor, Crab Apple Whitewater, and Berkshire Whitewater (Whitewater Interest Group) filed timely motions to intervene. On March 28, 2019, Franklin Regional Council of Governments (Franklin Regional Government) filed a timely motion to intervene. On March 29, 2019, the Deerfield River Watershed Chapter of Trout Unlimited (Trout Unlimited) and Great River Hydro, LLC (Great River Hydro) filed timely motions to intervene. On April 1, 2019, the Connecticut River Conservancy (CRC) and the Deerfield River Watershed Association filed timely motions to intervene, and the Massachusetts Division of Fisheries and Wildlife (Massachusetts DFW) filed a timely notice of intervention.[6] None of the intervenors oppose the project.

5. The Massachusetts Historical Commission, acting in its capacity as the Massachusetts State Historic Preservation Office (Massachusetts SHPO); Whitewater Interest Group; Deerfield River Watershed Association; Franklin Regional Government; Trout Unlimited; Great River Hydro; CRC; and the Commonwealth of Massachusetts filed comments. The Department of the Interior (Interior) filed comments and recommendations and a reservation of authority to prescribe fishways on March 27, 2019,

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Trust No. 2 as licensees); *USGen New England, Inc.*, 110 FERC ¶ 62,245 (2005) (approving transfer of license to Bear Swamp Power).

[4] 16 U.S.C. § 808(a)(1); *see also* May 7, 2020 Notice of Authorization for Continued Project Operation.

[5] 84 Fed. Reg. 2,213 (Feb. 6, 2019). The Commission's Rules of Practice and Procedure provide that if a filing deadline falls on a Saturday, Sunday, holiday, or other day when the Commission is closed for business, the filing deadline does not end until the close of business on the next business day. 18 C.F.R. § 385.2007(a)(2) (2025). Because the 60-day filing deadline fell on a Sunday (i.e., March 31, 2019), the filing deadline was extended until the close of business on Monday, April 1, 2019.

[6] A timely notice of intervention filed by a state fish and wildlife agency is granted by operation of Rule 214(a)(2). 18 C.F.R. § 385.214(a) (2025).

and Massachusetts DFW filed comments and recommendations on April 1, 2019. Bear Swamp Power filed reply comments on May 15, 2019.[7]

6. On October 31, 2019, pursuant to the National Environmental Policy Act,[8] Commission staff issued a draft environmental assessment (EA) analyzing the effects of the proposed project and alternatives to it, and setting December 15, 2019, as the deadline for filing comments. The Whitewater Interest Group, Deerfield River Guides Association, and Interior filed comments on the draft EA on December 11, 12, and 13, 2019, respectively. On December 16, 2019, Bear Swamp Power, Trout Unlimited, Great River Hydro, Independent Service Operator of New England (ISO New England), the Massachusetts SHPO, and, jointly, CRC and the Deerfield River Watershed Association filed comments on the draft EA. Massachusetts DFW filed comments and revised recommendations on the same day. On December 17, 2019, Rich Holschuh filed comments on the draft EA. Bear Swamp Power filed a response to comments on the draft EA on February 25, 2020. Commission staff issued a final EA on July 31, 2020. On September 9, 2020, the Massachusetts SHPO filed comments on the final EA.

7. The interventions, comments, recommendations, and prescriptions have been fully considered in determining whether, and under what conditions, to issue the license.

Project Description

A. Project Area

8. The Bear Swamp Project is located on the Deerfield River in Franklin and Berkshire Counties, Massachusetts. The Deerfield River begins near the towns of Glastenbury and Stratton in Vermont and flows approximately 70 miles mostly south and east to its confluence with the Connecticut River in Greenfield, Massachusetts. The Deerfield River has a total drainage area of 665 square miles with about half the area in southern Vermont (318 square miles) and half in western Massachusetts (347 square miles).

[7] The reply comments did not respond to the comments of the Commonwealth of Massachusetts, which were filed on May 15, 2019.

[8] 42 U.S.C. §§ 4321 *et seq.*; *see also* 18 C.F.R. pt. 380 (2025) (Commission's regulations implementing NEPA); FERC, *Staff Guidance Manual on Implementation of NEPA*, (June 2025), https://www.ferc.gov/media/staff-guidance-manual-implementationnational-environmental-policy-act-june-2025.

9. There are 11 hydropower developments on the Deerfield River, which are part of three licensed hydropower projects: Deerfield Project No. 2323, Gardners Falls Project No. 2334, and the Bear Swamp Project. The three licensed hydropower projects together consist of a water storage reservoir, nine conventional hydroelectric dam facilities, and the Bear Swamp PSD. The Deerfield Project No. 2323 consists of three developments in Vermont (the Somerset storage reservoir, Searsburg, and Harriman) and five in Massachusetts (Sherman, Deerfield No. 5, Deerfield No. 4, Deerfield No. 3, and Deerfield No. 2), located between river miles (RM) 13.2 and 66 on the Deerfield River.[9] The Gardners Falls Project No. 2334 is located at RM 15.7 on the Deerfield River between the Deerfield No. 2 and Deerfield No. 3 developments.[10] As further described below, the Bear Swamp Project consists of the Bear Swamp PSD, located at RM 37.6, and the Fife Brook Development, located at RM 37.0, on the Deerfield River.

10. The Bear Swamp Project is located downstream of five of the Deerfield Project's developments. The uppermost hydropower development in the Deerfield River Basin is the Deerfield Project's Somerset Development, which operates as a storage reservoir to regulate water in the river basin for the downstream Deerfield Project developments. The Station No. 5 Development is located immediately upstream and adjacent to the Bear Swamp Project. The Deerfield Station No. 5 powerhouse discharges directly into the Fife Brook impoundment, approximately 0.5 mile upstream of the intake for the Bear Swamp PSD. The dam for Deerfield Station No. 5 is located about 3.6 miles upstream of the intake for the Bear Swamp PSD. Approximately 1.2 miles of the bypassed reach of Deerfield Station No. 5 overlaps with the upper extent of the Fife Brook impoundment, from the Deerfield Station No. 5 powerhouse to the upstream extent of the Bear Swamp Project boundary.

11. Land in the project vicinity is predominately forested and agricultural, with some residential development.

B. Project Facilities

Bear Swamp Pumped Storage Development

12. The Bear Swamp PSD consists of an upper reservoir, upper reservoir intake structure, penstocks, powerhouse, transmission lines, tailrace, lower reservoir outlet and intake structures, lower reservoir, and appurtenant facilities.

13. The 118-acre upper reservoir for the Bear Swamp PSD has a gross storage capacity of 8,300 acre-feet at the normal maximum water level elevation of 1,600 feet

[9] *New England Power Company*, 79 FERC ¶ 61,006 (1997).

[10] *Western Mass. Electric Co.*, 79 FERC ¶ 61,007 (1997).

National Geodetic Vertical Dam of 1929 (NGVD29). The upper reservoir is contained by existing topography and four project dikes with a crest elevation of 1,606 feet NGVD29, including: (1) an approximately 1,300-foot-long, 155-foot-high curved, earth and rockfill dike (North Dike); (2) an approximately 350-foot-long, 23-foot-high earth and rockfill dike extending from the east side of the North Dike (Dike A); (3) an approximately 2,880-foot-long, 140-foot-high earth and rockfill dike (South Dike); and (4) an approximately 750-foot-long, 50-foot-high earth and rockfill dike (East Dike). An approximately 420-foot-long emergency spillway with a crest elevation of 1,602 feet NGVD29 is excavated into the bedrock to the east of Dike A.

14. A 40-foot-diameter concrete intake structure is located on the floor of the upper reservoir. The intake structure conveys water from the upper reservoir to two 11-foot-diameter steel-lined penstocks via an approximately 1,430.5-foot-long tunnel system. The penstocks convey water to a 227-foot-long, 79-foot-wide, 182-foot-high underground powerhouse that contains two reversible Francis pump-turbine-generator units with a total authorized capacity of 666 MW.[11]

15. Water is conveyed from the powerhouse to the lower reservoir (i.e., Fife Brook impoundment) through two 504-foot-long, 22-foot-wide, 29.5-foot-high concrete-lined underground draft tube tunnels. Each draft tube tunnel connects to two 20-foot-high, 15-foot-wide discharge bays that also serve as intake channels when pumping. The four discharge bays/intake channels are equipped with 16-foot-wide, 20.6-foot-high slide gates and 15-foot-wide, 26.7-foot-high trashracks with 6-inch clear bar spacing. A 150-foot-long concrete apron extends from the trashracks into the Fife Brook impoundment. In addition to the structures listed above, the Bear Swamp PSD includes an approximately 88-foot-long, 4-foot-high submerged weir in the upper reservoir that includes three 5-foot-wide, 3-foot-high stoplog gates that are used to maintain a pool of water during de-watering and re-watering of the upper reservoir.

16. Electricity generated at the powerhouse is transmitted to the regional electric grid via: (1) two 13.8/230-kilovolt (kV) step-up transformers at the powerhouse; (2) an approximately 4,075-foot-long 230-kV overhead transmission line; (3) an approximately 3,960-foot-long 230-kV overhead transmission line; and (4) appurtenant facilities.

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[11] The April 28, 1970 original license authorized an installed generating capacity of 600 MW for the Bear Swamp PSD. *New England Power Co.*, 43 FPC ¶ 568. On August 13, 2008, the Commission authorized the rehabilitation of the existing Francis pump-turbine-generator units to create an additional 66 MW of installed capacity, thereby increasing the total authorized capacity for the Bear Swamp PSD to 666 MW. *Bear Swamp Power Co., LLC*, 124 FERC ¶ 62,127 (2008) (2008 Amendment Order).

Fife Brook Development

17. The Fife Brook Development includes an 890-foot-long, 130-foot-high earthen rock-fill dam (Fife Brook dam) with a crest elevation of 880 feet NGVD29. The dam consists of the following structures: (1) an approximately 72-foot-wide spillway section that includes two 36-foot-wide, 40-foot-high steel Tainter spillway gates; (2) an approximately 15-foot-wide concrete intake structure that includes an 11.2-foot-wide, 24-foot-high trashrack with 3-inch bar spacing and a 15-foot-wide, 18-foot-high headgate; and (3) an approximately 803-foot-wide non-overflow earthen embankment section. A roadway crosses the dam with a bed elevation of 880 feet NGVD29 and includes an approximately 72-foot-long bridge over the Tainter spillway gate section.

18. The Fife Brook dam impounds a 152-acre, 2.5-mile-long reservoir with a gross storage capacity of 6,900 acre-feet at a surface elevation of 870 feet NGVD29. From the impoundment, water is conveyed through the intake structure and a 10-foot-diameter, 200-foot-long steel penstock to an approximately 79.25-foot-long, 44-foot-wide, 94-foot-high concrete powerhouse containing a 10-MW Francis turbine-generator unit. From the powerhouse, water is conveyed to the downstream reach of the Deerfield River via a 21-foot-long steel-lined draft tube.

19. In addition to the structures listed above, the Fife Brook Development includes a 30-inch-diameter minimum flow release pipe that extends from the Fife Brook dam for approximately 325 feet before bifurcating into two approximately 55-foot-long pipes; one 20 inches in diameter and one 24 inches in diameter.

20. Electricity generated at the powerhouse is transmitted to the regional electric grid via: (1) a partially buried (860-foot-long section) and partially overhead (7,060-foot-long section) 13.8-kV transmission line connecting the turbine-generator unit to a non-project substation owned by Great River Hydro; and (2) appurtenant facilities.

Project Recreation Facilities

21. Project recreation facilities include the Bear Swamp Visitor Center, the Fife Brook Fishing and Boating Access Area, the Zoar Whitewater Access Area, the Zoar Picnic Area, the Bear Swamp Public Hunting Area, and the Bear Swamp and Hoosac Tunnel Trails. A more detailed description of the project facilities is contained in Ordering Paragraph (B)(2).

C. Project Boundary

22. Under the prior license, the project boundary enclosed approximately 1,474 acres, including: (1) the upper and lower reservoirs (approximately 270 acres); (2) land associated with project structures (approximately 130 acres); and (3) land around the

reservoirs and downstream of Fife Brook dam that is used for recreation and environmental protection (1,074 acres).

23. Bear Swamp Power proposes that the following lands included within the project boundary under the prior license not be included within the project boundary under the new license: (1) 109.74 acres of land northeast of the upper reservoir that is currently part of a conservation easement; (2) 20.04 acres of land west of the Fife Brook dam that is currently part of a conservation easement; (3) 31.99 acres of land associated with River Road and land north of Fife Brook impoundment that is currently part of a conservation easement; (4) 5.9 acres of land associated with River Road downstream of the Fife Brook dam; and (5) approximately 1.0 acre of land due to minor adjustments to the project boundary line. The proposed changes would decrease the area enclosed by the project boundary to a total of 1,305.3 acres.

D. Current Project Operation and License Requirements

1. Project Operation

24. The Fife Brook development's impoundment serves as the lower reservoir for the Bear Swamp PSD. The Bear Swamp PSD operates as a peaking facility, pumping at night when power prices are low and generating during peak power demand periods during the day. The Fife Brook impoundment has an allowable daily fluctuation of 40 feet, from a minimum water surface elevation of 830 feet NGVD29 to a maximum water surface elevation of 870 feet NGVD29, which provides a useable storage capacity of 4,600 acre-feet. The upper reservoir for the Bear Swamp PSD has an allowable daily fluctuation of 50 feet from a maximum water surface elevation of 1,600 feet NGVD29, which provides a useable storage capacity of 5,260 acre-feet.[12] Bear Swamp Power holds a portion of the upper reservoir's useable storage capacity between elevations 1,555.5 and 1,550 feet NGVD29 in reserve for emergency conditions (i.e., to support the regional grid during unexpected events) and ancillary services to the regional grid,[13] thereby reducing the storage capacity of the upper reservoir to 4,600 acre-feet for daily energy production.

25. The specific timing of the pumping/generation process at the Bear Swamp PSD varies daily depending on the on-peak and off-peak power conditions, and the need to provide ancillary services to the regional grid. Within a 24-hour period, the Bear Swamp

[12] *New England Power Co.*, 43 FPC ¶ 568, ordering para. (C).

[13] Ancillary services help balance the transmission system as electricity is moved from generating sources to consumers and are necessary for proper grid operation. Ancillary services include load following, reactive power-voltage regulation, system protective services, loss compensation service, system control, load dispatch services, and energy imbalance services.

PSD typically uses the 4,600-acre-feet of storage capacity to produce approximately 3,028 megawatt-hours (MWh) of generation over approximately 5.3 hours, and then uses approximately 4,286 MWh of pumping energy to refill the reservoir over approximately 7.2 hours. The combined hydraulic capacity of the two Francis pump-turbine-generator units at the Bear Swamp PSD is 12,400 cubic feet per second (cfs) in generation mode and 9,040 cfs in pump mode.

26. As part of a March 2005 off-license agreement with the licensee of the Deerfield Project,[14] Bear Swamp Power committed to: (1) "operate the upper and lower reservoirs of the Bear Swamp Project in balance as though the project was a closed-cycle system;" and (2) "each day operate the Fife Brook Development in a run-of-river mode of operation that maintains the flow balance, provided such operation is in compliance with [Bear Swamp Power's] FERC license."[15]

27. The Fife Brook Development includes a 10-MW turbine-generator unit with a minimum hydraulic capacity of approximately 270 cfs[16] and a maximum hydraulic capacity of 1,540 cfs. Bear Swamp Power does not run the turbine-generator unit at the Fife Brook Development below an output of approximately 3 MW due to rough operating conditions that are encountered when output reaches this level.[17] To avoid sudden increases in flow downstream of Fife Brook dam, Bear Swamp Power ramps the unit up to the 3-MW output level, and holds the unit at 3 MW for 15 minutes before increasing generation to higher output levels. A unit output of 3 MW results in a powerhouse discharge of between 270 cfs and 650 cfs, depending on the elevation of the impoundment. When the Fife Brook impoundment is full and inflow exceeds the maximum hydraulic capacity of the unit's turbine, the turbine-generator unit is operated at its maximum capacity and excess flow is released through the Tainter gates.

28. On April 4, 1997, the Commission amended the license to include additional operating conditions related to minimum flows, whitewater flow releases, and the protection of environmental resources, pursuant to a settlement agreement between the

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[14] *See* TransCanada Hydro Northeast, Inc. Jun. 9, 2008 Motion to Intervene and Comments, attach. A.

[15] *Id.* at A-2

[16] The minimum hydraulic capacity of 270 cfs is based on an impoundment elevation of 870 feet NGVD29.

[17] Bear Swamp Power references cavitation conditions that occur at lower operating ranges. Cavitation occurs when the local fluid pressure falls below the vapor pressure of water and has the potential to cause vibration, damage to the blade surface, and performance loss.

licensee, federal and state resource agencies, and several non-governmental organizations.[18] Article 401 of the prior license requires a minimum flow of 125 cfs to be released from the Fife Brook dam to protect aquatic habitat in the Deerfield River. The license requires water to be released from "reservoir storage," if necessary, to ensure that the minimum flow of 125 cfs is met; therefore, Bear Swamp Power states that it reserves an additional 150 acre-feet of stored water in the Fife Brook impoundment to supplement inflow when needed.[19] The 125-cfs minimum flow is released through Fife Brook development's 30-inch-diameter minimum flow release pipe.

29. The average annual energy production from the Bear Swamp PSD and the Fife Brook Development from 2006 through 2015 was 451,070 MWh[20] and 32,793 MWh, respectively.

2. Other License Requirements

30. Article 404 of the prior license requires whitewater releases from the Fife Brook dam at a minimum flow of 700 cfs for a duration of at least three continuous hours for 56 weekdays and 50 weekend days from April 1 through October 31. The whitewater flows must occur between 9:30 a.m. and 12 p.m. These flows are generally released through the Fife Brook turbine-generator unit.

31. In addition, Article 405 of the prior license requires the protection of scenic, forestry, and natural resources on 1,257 acres of land around the reservoirs and downstream of Fife Brook dam via a conservation easement.

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[18] *New England Power Co*., 79 FERC ¶ 61,009 (1997). The settlement agreement was filed with the Commission on October 6, 1994 (1994 Settlement Agreement). The settlement agreement covered a wide range of issues involving the relicensing of the Deerfield Project, but also included measures that the former licensee, New England Power Company, agreed to implement at the Bear Swamp Project.

[19] The minimum flow requirement for Deerfield Station No. 5 into the Fife Brook impoundment is 73 cfs; therefore, inflow to the Bear Swamp Project is, at times, less than the required minimum flow release of 125 cfs from Fife Brook dam. Bear Swamp Power uses the 150-acre-feet of storage to make up the difference. *See New England Power Co.,* 79 FERC ¶ 61,006 (1997) (Deerfield Project License Order).

[20] This value reflects gross generation produced as water passes from the upper reservoir to the lower reservoir through the turbines. The average annual energy used for pumping water back up to the upper reservoir is 618.293 MWh.

E. Proposed Operation and Environmental Measures

32. Bear Swamp Power proposes to continue to operate the Bear Swamp PSD as a pump-storage facility by pumping water from the Fife Brook impoundment during periods of low electricity demand, storing the water until periods of high electricity demand, and then generating electricity by discharging water back into the Fife Brook impoundment during periods of high electricity demand.

33. Bear Swamp Power proposes to continue to operate the Bear Swamp PSD upper reservoir with a normal maximum water surface elevation of 1,600 feet NGVD29 and a 50.0-foot maximum allowable drawdown (i.e., 1,550 to 1,600 feet NGVD29).

34. Bear Swamp Power proposes to continue to operate the Fife Brook impoundment with a normal maximum water surface elevation of 870 feet NGVD29 and a 40.0-foot maximum allowable drawdown (i.e., 830 to 870 feet NGVD29).

35. To protect fish and aquatic resources in the Deerfield River, Bear Swamp Power proposes to continue to provide a 125-cfs continuous minimum flow release from the Fife Brook dam.

36. Bear Swamp Power proposes to develop an operation compliance monitoring plan that describes: (1) the mechanisms and structures that will be used to provide minimum flow releases and whitewater flow releases; (2) periodic maintenance and calibration for any installed measuring devices; and (3) procedures for recording and reporting data to the Commission and resource agencies.

37. To minimize the spread of invasive mussel species at the project (e.g., zebra mussels and quagga mussels), Bear Swamp Power proposes to develop an invasive mussel species monitoring and management plan that includes the following measures: (1) educational training for project maintenance staff; (2) educational signage for the public; (3) best management practices for minimizing the spread of invasive mussel species during project-related construction and maintenance activities; and (4) rapid notification, coordination, and response with appropriate federal and state resource agencies in the event invasive mussel species are detected at the project.

38. Bear Swamp Power proposes to develop a state-listed rare plants management plan that includes measures to minimize adverse project effects on state-listed rare plants.

39. To reduce the spread of invasive plant species, Bear Swamp Power proposes to develop an invasive plant species monitoring and management plan that includes the following measures: (1) educating recreational users on ways to reduce the spread of invasive plant species; (2) implementing best management practices, such as identifying invasive plant species that may be introduced through recreation and ground-disturbing activities on project land, identifying critical control points (locations and times), and

implementing measures to prevent the spread of invasive plant species during routine project operation and maintenance activities; (3) recording incidental observations of invasive plant species; and (4) using only native seed and plant materials outside of lawn areas.

40. To protect bald eagles, Bear Swamp Power proposes to develop a bald eagle protection plan that includes provisions to: (1) avoid killing, injuring, or harassing bald eagles during tree cutting or thinning operations at the project; and (2) minimize project effects on nesting bald eagles at the project.

41. To protect bats, Bear Swamp Power proposes to develop a bat management plan that includes measures to avoid or minimize adverse project effects on the northern long-eared bats and little brown bats.

42. To protect and enhance recreation access at the project, Bear Swamp Power proposes to develop a recreation facilities management plan that includes provisions to: (1) continue operating and maintaining the existing project recreational facilities; (2) design and construct a new boater egress trail within the project boundary, beginning at the shoreline of the Fife Brook impoundment downstream from the Showtime rapid and extending upstream to the existing vehicle turnaround at Great River Hydro's Dunbar Brook Picnic Area, which is part of the Deerfield Project's Deerfield Station No. 5 Development; (3) improve overflow parking at the Fife Brook Fishing and Boating Access Area; (4) widen the access trail at the Zoar Whitewater Access Area; (5) install additional seasonal restroom facilities, a stall-type changing facility, and an additional staircase at the Zoar Picnic Area; (6) install handrails on staircases at project recreation areas; and (7) install additional signage to educate recreationists on safety and the Deerfield River flow regime.

43. To ensure flow for recreational whitewater boating at the project, Bear Swamp Power proposes to continue to annually provide 106 scheduled whitewater flow releases from the Fife Brook dam for a minimum duration of 3 hours on 50 weekend days and 56 weekdays from April 1 through October 31.

44. To provide scheduled recreational whitewater flows at the project, Bear Swamp Power proposes to release 74 of the 106 scheduled whitewater flows at 11 a.m. and release the remaining 32 scheduled whitewater flows between 11 a.m. and 12 p.m.

45. To enhance recreational whitewater flow releases at the project, Bear Swamp Power proposes to increase whitewater flow release volumes from 700 cfs to 800 cfs.

46. To protect historic properties within the project boundary, Bear Swamp Power proposes to develop a historic properties management plan (HPMP) for properties that are eligible for or listed on the National Register of Historic Places (National Register).

Summary of License Requirements

47. This license, which authorizes 676 MW of electrical generation capacity, requires the proposed measures noted above, except for Bear Swamp Power's proposed bat management plan. This license also requires the staff-recommended measures described below and the conditions required by the Massachusetts Department of Environmental Protection's (Massachusetts DEP) water quality certification (certification) (Appendix A of this license). Combined, these measures will protect or enhance aquatic resources, water quality, federally listed species, recreation resources, and cultural resources at the project.

48. To enhance whitewater boating opportunities in the Fife Brook impoundment, this license requires that Bear Swamp Power maintain the impoundment between the elevations of 830 and 835 feet NGVD29 during the hours of 10 a.m. to 12 p.m. on the 32 days of the year when the licensee for the Deerfield Project No. 2323 is scheduled to release whitewater flows from the Deerfield Station No. 5 dam.[21]

49. To enhance the safety of recreational users downstream of the Fife Brook dam, from April 1 through October 31, when restarting the Fife Brook development powerhouse, this license requires that Bear Swamp Power ramp generation up to 3 MW and hold the generator at 3 MW for 15 minutes before increasing generation to higher levels.

50. To document compliance with the license's operational requirements, this license requires an operation compliance monitoring plan, consistent with Massachusetts DEP's certification condition 4A(3), that modifies Bear Swamp Power's proposed plan to include: (1) a description of how Bear Swamp Power will document compliance with the license requirements for impoundment elevations, minimum flow releases, generation up-ramping, and whitewater flow releases; (2) a description of the locations of devices or techniques to monitor compliance with license requirements; (3) standard operating procedures to be implemented outside of normal operating conditions, such as scheduled facility shutdowns, maintenance, and emergencies; (4) a daily log of project operation;

[21] Great River Hydro provides scheduled whitewater releases to the bypassed reach of Deerfield Station No. 5 on 26 weekend days/holidays and six Fridays from May 1 to October 21 annually. The whitewater releases are required to last for four continuous hours on Fridays starting at 11 a.m., five continuous hours on Saturdays starting at 10 a.m., and four continuous hours on Sundays starting at 10 a.m. The flow levels for the whitewater release periods are required to be between 900 and 1,100 cfs, with an annual average of 1,000 cfs. *New England Power Co*., 79 FERC ¶ 61,009 (1997).

and (5) a schedule for installing any monitoring equipment to document compliance with license conditions.

51. To protect bald eagles within the project boundary, this license requires the following measures for nesting bald eagles from the U.S. Fish and Wildlife Service's (FWS) 2007 National Bald Eagle Management Guidelines be incorporated into Bear Swamp Power's proposed bald eagle protection plan: (1) keep a distance of at least 330 feet between the project-related activity and the nest; (2) maintain forested (or natural) areas between the project-related activity and around nest trees; and (3) avoid construction and maintenance activities on project land during the breeding season.

52. To protect northern long-eared bats and tricolored bats, this license requires Bear Swamp Power to avoid the removal or trimming of non-hazardous trees from April 1 through October 31, instead of Bear Swamp Power's proposed bat management plan.

53. To enhance recreation, this license modifies Bear Swamp Power's proposal to construct a boater egress trail from the Fife Brook impoundment near Showtime rapid upstream to Great River Hydro's Dunbar Brook Picnic Area by also requiring Bear Swamp Power to construct and maintain a boater take-out site at the Fife Brook impoundment downstream of the Showtime Rapid and install signage along the river to guide boaters to the take-out.

54. To improve parking at the Fife Brook Fishing and Boating Access Area, this license modifies Bear Swamp Power's proposal to improve overflow parking at the site by requiring Bear Swamp Power to remove vegetation and place gravel throughout the unpaved overflow parking area across River Road and mark/define at least 10 additional parking spaces to ensure optimal use of available space and maximize parking efficiency.

55. To enhance access for whitewater boaters and increase recreational safety, this license requires Bear Swamp Power to widen the access trail at the Zoar Whitewater Access Area to a width of 8 feet so that whitewater rafts can more easily be carried from the road to the river.

56. To enhance recreational safety and recreational opportunities at the Zoar Picnic Area, this license modifies Bear Swamp Power's proposal to install and maintain additional seasonal restrooms and a changing stall by requiring Bear Swamp Power install and maintain the following amenities: (1) at least two additional seasonal restrooms; (2) a changing facility with at least four changing stalls; and (3) at least six seasonal trash receptacles, with five of them located near picnic tables and one at the exit.

57. To protect recreation at the project, this license modifies Bear Swamp Power's proposed recreation facilities management plan to include measures that: (1) limit tree cutting at the Zoar Picnic Area to the selective cutting of only hazardous trees to maintain

shaded picnic sites; and (2) replace trees that are removed from the Zoar Picnic Area with new trees that are of a native species, which will adapt to the site's growing conditions.

58. To ensure safe river access for anglers in the Deerfield River downstream of Fife Brook dam, this license modifies Bear Swamp Power's proposed recreation facilities management plan to include measures for operating and maintaining two undeveloped access sites, that are located on project land, as project recreation sites (i.e., the "Carbis Bend" and the "Bridge to Nowhere" access sites).

59. To ensure the safety of recreationists in the Deerfield River downstream of Fife Brook dam, this license modifies Bear Swamp Power's proposed recreation facilities management plan to include the following measures: (1) install and maintain warning systems, including audible sirens and flashing strobe light warnings, at project recreation facilities downstream of Fife Brook dam to provide warning of water releases from the dam; (2) install signage at project recreation sites describing the flow releases from Fife Brook dam and the safety warning systems at the sites, including the 15-minute pause at 3 MW; and (3) install either an emergency phone or dedicated Wi-Fi access for emergency communications with a limited range at each of the project recreation sites along the Deerfield River downstream of Fife Brook dam.

60. To ensure that flow information is available for recreational users on the Deerfield River downstream of the Fife Brook dam, this license requires that Bear Swamp Power maintain a public website that provides: (1) the annual schedule for whitewater flow release days; (2) a 24-hour schedule for the timing and size of flows from the Fife Brook Development to the Deerfield River, to be posted by 5 p.m. on the prior day; (3) current outflow from the Fife Brook dam; (4) updates to the current 24-hour schedule and the current outflow information on a 5-minute basis; (5) a map that displays the amount of time it takes for whitewater releases of 800 cfs to flow from Fife Brook dam to each project recreation site; and (6) information on the location of the project recreation sites and their amenities.

Water Quality Certification

61. Under section 401(a)(1) of the Clean Water Act (CWA),[22] the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued a certification for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed one year. Section 401(d) of the CWA provides

[22] 33 U.S.C. § 1341(a)(1).

that the certification must become a condition of any federal license that authorizes construction or operation of the project.[23]

62. On March 25, 2019, Bear Swamp Power applied to Massachusetts DEP for certification for the Bear Swamp Project, which Massachusetts DEP received on March 27, 2019. On March 23, 2020, Massachusetts DEP denied certification without prejudice due to a lack of sufficient information to determine that project operation would comply with state water quality standards and minimize adverse effects on fish and dragonflies at the project.[24]

63. On April 27, 2020, Bear Swamp Power notified the Commission that on April 13, 2020, it had filed an appeal of Massachusetts DEP's denial of the certification. But Bear Swamp Power subsequently requested that the appeal be stayed to allow it and the Massachusetts DEP and Trout Unlimited to enter into Alternative Dispute Resolution. On May 28, 2020, the Massachusetts DEP Office of Appeals and Dispute Resolution (Massachusetts OADR) granted Bear Swamp Power requested stay.[25] On January 24, 2022, Bear Swamp Power, Massachusetts DEP, and Trout Unlimited filed a settlement agreement and proposed certification with Massachusetts OADR for review. Massachusetts OADR issued a "Recommended Final Decision" to approve the Settlement Agreement and proposed certification on January 12, 2022.

64. On October 28, 2022, Massachusetts DEP issued a certification for the project that includes 23 conditions. Fifteen of the conditions (conditions 1, 6, 10, and 12 through 23) are general or administrative in nature. The remaining conditions require Bear Swamp Power to:

(1) operate the Bear Swamp PSD with a normal allowable usable storage capacity of 4,600 acre-feet and an allowable drawdown of 40 feet in the Fife Brook impoundment from a maximum full elevation of 870 feet NGVD29 to minimum elevation of 830 feet NGVD29 (condition 2);

(2) operate the Fife Brook Development in a run-of-release mode passing minimum flows received from the Deerfield Station No. 5 (condition 2);

(3) maintain up to 150 acre-feet of stored water in the Fife Brook Development to provide minimum flow releases (condition 2); [26]

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[23] *Id.* § 1341(d).

[24] Massachusetts DEP March 23, 2020 Notice of Denial of Water Quality Certification.

[25] Bear Swamp Power, January 22, 2021 Status Update.

[26] Condition 2 refers to 150 acre-feet of stored water in the Fife Brook

(4) use and replenish the 150 acre-feet of stored water in the Fife Brook Development (positive balance) from inflow received from the Deerfield Station No. 5 (condition 2);[27]

(5) release a minimum flow of 125 cfs from the Fife Brook Development, through the use of inflow and the positive balance so long as the inflow allows, from April 16 through October 31 (condition 3);

(6) release a minimum flow of 225 cfs from the Fife Brook Development from November 1 through April 15 for the overwintering protection of trout redds[28] in Long Pool and Beaver Island,[29] through the use of inflow and positive balance, by restoring positive balance at the end of the first generation cycle at the Fife Brook Development on November 1 and maintaining a positive balance until April 15, contingent upon the following conditions:

a. if Deerfield Station No. 5 forecasts a generation release within 18 hours of the previous Fife Brook generation cycle, release 225 cfs using up to 100 acre-feet of the positive balance and then release 125 cfs until the next Fife Brook Development generation cycle; or

b. release 125 cfs if Deerfield Station No. 5 does not forecast a release within 18 hours at the end of the last Fife Brook Development generation cycle (condition 4);

(7) within one year of license issuance, develop a seasonal minimum flow release plan that includes, at a minimum: (a) functional design drawings and calculations showing the proposed modifications to the project to allow for a seasonal minimum flow release from the Fife Brook Development of

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Development as a "positive balance."

[27] Condition 2 also states that the Bear Swamp PSD's storage should not be used to replenish the positive balance, and Bear Swamp Power will not be required to carry a positive balance more than 150 acre-feet.

[28] A redd is a nest created by a female salmonid or trout to protect their eggs. The females create a depression with their tail in gravel riffles and eggs are laid, fertilized, and buried. The embryos develop in the redd, under the gravel and cobble, typically 1 to 2 months, until the eggs hatch. Newly hatched offspring are called alevins and may remain in the redd under the gravel until their yolk sac is absorbed for up to 6 additional weeks when they emerge from the redd as free-swimming fry.

[29] Long Pool and Beaver Island are located in the Deerfield River approximately 0.6 mile and 4.2 miles downstream, respectively, of Fife Brook dam.

225 cfs from November 1 through April 15; (b) a construction schedule; (c) a description of measures Bear Swamp Power will take to provide a continuous 125-cfs minimum flow release from the Fife Brook Development during construction of the new minimum flow system; and (d) provisions for releasing minimum flows by other means in the event of failure of the minimum flow system (condition 4A(1));

(8) commence and complete construction of a new minimum flow system to provide the seasonal 225-cfs minimum flow in accordance with the schedule approved by the Commission in the seasonal minimum flow release plan and/or in any order issued by the Commission (condition 4A(2));

(9) begin providing the 225-cfs seasonal minimum flow on the November 1st following completion of the construction of the new minimum flow system, or on the November 1st occurring three (3) years after the Commission's issuance of a new license for the project, whichever occurs earlier, barring delays in the Commission's approval process of the seasonal minimum flow release plan (condition 4A(2));

(10) prior to completing the construction of the new minimum flow system, revise the operation compliance monitoring plan to describe how Bear Swamp Power will document compliance with the seasonal 225-cfs minimum flow requirement, including, at a minimum: (a) a detailed description of how Bear Swamp Power will document compliance with the 225-cfs seasonal minimum flow release, including a plan and schedule for conducting a field verification of the 225-cfs seasonal minimum flow across all reservoir levels; (b) a description of any mechanisms or structures that will be used, including any periodic maintenance and/or calibration necessary to ensure proper operation; (c) the level of manual and automatic operation; (d) the methods and mechanisms used for recording data, including data on project operation to verify proper timing and minimum flow releases; and (e) the methods and frequency for reporting monitoring data to the Commission, Massachusetts DEP, FWS, and Massachusetts DFW (condition 4A(3));

(11) provide 106 annual whitewater flow releases of 800 cfs from the Fife Brook Development on 50 weekend days and 56 weekdays from April 1 through October 31 for a minimum duration of 3 hours (condition 5A);[30]

[30] Condition 5A also states that the 106 scheduled whitewater flow releases must include 74 days of releases from the Fife Brook Development only (Fife Brook Only Release Days) and 32 days of releases from the Deerfield Station No. 5 to the Deerfield Station No. 5 bypass reach (Station No. 5 Bypass Reach Release Days). Condition 5A

(12) provide stable or diminishing flows from the Fife Brook Development from 7:00 a.m. to 11:30 a.m. on scheduled release days from May 15 through June 15 and July 8 through August 31 (condition 5B);

(13) provide stable or diminishing flows from the Fife Brook Development from 7:00 a.m. through a start time of generation flows that averages 11:30 a.m., or later, on unscheduled whitewater release days from May 15 through June 15 and July 8 through August 31 (condition 5B), the averaging of which must be calculated in groups of no more than two days (condition 5C);[31]

(14) when inflow exceeds the capacity of the Fife Brook impoundment, and the flow regime schedule outlined in 5B would cause the impoundment to rise above permitted levels, deviations from the flow regime schedule on unscheduled whitewater release days are permitted, provided that:

a. generation flow may not start earlier than 10:00 a.m. on any days between May 15 through June 15, and not earlier than 9:00 a.m. on any days between July 8 through August 31;

b. generator ramping (up to no more than 3 MW) may begin no more than 15 minutes prior to the designated start time of any release between May 15 through June 15 and July 8 through August 31;

c. releases earlier than 11:30 a.m. may occur on no more than 5 days between May 15 through June 15, and no more than 10 days between July 8 and August 31 (condition 5C);[32]

(15) provide $33,250 annually to Massachusetts DFW for a dragonfly mitigation fund, unless Massachusetts DFW provides other instructions to Bear

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states that flows on Fife Brook Only Release Days must begin at 11:30 a.m., and flows on Deerfield Station No. 5 Bypass Reach Release Days must begin between 11:30 a.m. and 12:00 p.m.

[31] For example, one 12:30 p.m. start time can be paired with one 10:30 a.m. start time to average 11:30 a.m. (a group of two days), but one 2:00 p.m. start time cannot be paired with two 10:15 a.m. start times (a group of more than two days).

[32] Condition 5C states that two emergencies that result in early releases will count toward the total cap of five early releases during the May 15 through June 15 period, and five early releases will count toward the total cap of 10 during the July 8 through August 31 period. Condition 5C states that weather, meteorological, or rainfall/runoff events will not count toward the caps for either period.

Swamp Power, for the term of the license and any extensions (condition 7);[33]

(16) within three years of license issuance, provide $125,000 to Massachusetts DEP for an aquatic resources protection fund to be used for the protection of aquatic resources in the Deerfield River (condition 8);

(17) develop an invasive plant species monitoring and control plan (condition 9);

(18) within 30 days of license issuance, provide an initial payment of $5,000 and $2,000 annually thereafter for the term of the license to Massachusetts DFW's Natural Heritage and Endangered Species Program to conduct invasive plant surveys, mapping, control, management or eradication, and planning necessary to complete those tasks (condition 9);[34] and

(19) develop an invasive aquatic wildlife species monitoring and management plan (condition 11).

65. Massachusetts DEP's certification conditions 2, 4, and 5 are consistent with Bear Swamp Power's proposal and the staff alternative recommended in the final EA. Massachusetts DEP's certification conditions 3, 7, 8, 9, 11 are not consistent with the staff alternative and are discussed below under Section 10(a) of the FPA; however, they are included in this license as mandatory under section 401 of the CWA. The 23 conditions of Massachusetts DEP's certification are set forth in Appendix A of this order and incorporated into the license by Ordering Paragraph (D).

66. Conditions 7, 8, and 9 require the licensee to provide payments to third parties to be used for mitigation funds and activities but do not require the licensee to establish or administer the mitigation funds and implement the activities to be funded. Establishment or administration of the mitigation funds and implementation of the funded activities would be conducted off-license, and therefore, would not be under the Commission's jurisdiction to enforce.

[33] The condition notes that the required annual funding is subject to annual inflation adjustments in accordance with the U.S. Consumer Price Index as calculated from the date of license issuance. The amount of the annual funding may be adjusted downward depending on any changes in operation of the Deerfield Station No. 5.

[34] The condition notes that the required annual funding is subject to annual inflation adjustments in according with the U.S. Consumer Price Index as calculated from the date of license issuance.

Coastal Zone Management Act

67. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),[35] the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within six months of its receipt of the applicant's certification. By letter dated September 30, 2014,[36] the Massachusetts Office of Coastal Zone Management notified Bear Swamp Power that the project is not located within the Massachusetts Coastal Zone and that a coastal zone consistency review is not required.

Section 18 Fishway Prescription

68. Section 18 of the FPA[37] provides that the Commission must require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of Commerce or the Secretary of the Interior, as appropriate.

69. By letter filed March 27, 2019, Interior requested that the Commission reserve authority to prescribe fishways. Consistent with Commission policy, Article 402 of this license reserves the Commission's authority to require fishways that may be prescribed by Interior for the Bear Swamp Project.

Threatened and Endangered Species

70. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA)[38] requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of their designated critical habitat.

71. Based on the FWS's Information for Planning and Consultation (IPaC) website, the federally listed endangered northern long-eared bat (*Myotis septentrionalis*), the proposed threatened monarch butterfly (*Danaus plexipus*),[39] and the proposed endangered

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[35] 16 U.S.C. § 1456(c)(3)(A).

[36] Bear Swamp Power, Dec. 19, 2014 Pre-Application Document, app. C.

[37] 16 U.S.C. § 811.

[38] *Id.* § 1536(a)(2).

[39] FWS proposed to list the monarch butterfly as threatened on December 12, 2024. 89 Fed. Reg. 100,662 (Dec. 12, 2024).

tricolored bat (*Perimyotis subflavus*)[40] have the potential to occur at the project.[41] No critical habitat has been proposed or designated for the northern long-eared bat or tricolored bat and no critical habitat has been proposed for the monarch butterfly in the project area.

A. Northern Long-eared Bat

72. In the final EA,[42] Commission staff determined that the northern long-eared bat could be affected by project maintenance activities and recreation site improvements. Therefore, staff recommended a seasonal clearing restriction for non-hazardous trees greater than or equal to 3 inches in diameter at breast height from April 1 through October 31,[43] to minimize the adverse effects of project maintenance on the northern long-eared bat.[44] With this measure in place, staff concluded that relicensing the project may affect the northern long-eared bat, but that any incidental take that may result is not

[40] 87 Fed. Reg. 56,381 (2022). FWS's proposal was based primarily upon the range-wide impacts of white-nose syndrome that have caused declines in affected colonies. *Id.* at 56,385.

[41] *See* Commission staff's October 28, 2025 memorandum on FWS's List of Threatened, Endangered, Candidate, and Proposed Species; *see also IPaC,* FWS, https://ipac.ecosphere.fws.gov/.

[42] Final EA at 171.

[43] FWS's January 5, 2016 programmatic biological opinion for the northern long-eared bat states that northern long-eared bats roost in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags with a diameter of 3 inches or greater at breast height. FWS, Midwest Regional Office, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions*, at 11, 18 (January 5, 2016), https://www.fws.gov/sites/default/files/documents/BOnlebFinal4d.pdf. Diameter "at breast height" refers to the tree diameter as measured about 4 to 4.5 feet above the ground. Consistent with FWS's definition, "tree removal" is defined here as cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by northern long-eared bat. Hazardous trees are trees that are removed for the protection of human life and property. Removal of hazardous trees is not prohibited under the 4(d) rule. 81 Fed. Reg. 1901-1902 (Jan. 14, 2016).

[44] Final EA at 274.

prohibited under section 4(d) of the ESA.[45] On October 31, 2019, Commission staff requested FWS's concurrence that any incidental take associated with relicensing the project is not prohibited under the ESA section 4(d) rule for the northern long-eared bat. FWS concurred on October 31, 2019.[46]

73. On November 30, 2022, FWS published a final rule reclassifying the northern long-eared bat as endangered, and removing the species-specific rule issued under section 4(d) of the ESA, effective March 31, 2023.[47] Subsequent to the termination of the 4(d) rule, Commission staff concluded that relicensing the project with the staff-recommended measure is not likely to adversely affect the northern long-eared bat. FWS concurred on April 12, 2023.[48] As discussed below, avoiding the removal or trimming of all non-hazardous trees from April 1 through October 31 will protect the northern long-eared bat from project effects. Article 408 requires Bear Swamp Power to avoid the removal or trimming of all non-hazardous trees from April 1 through October 31.

B. Proposed Species

74. On September 14, 2022, FWS proposed to list the tricolored bat as endangered. FWS did not propose to designate critical habitat for the species.

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[45] FWS finalized an ESA section 4(d) rule for the northern long-eared bat in January 2016. *Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat*. 81 Fed. Reg. 1900 (Jan. 14, 2016). Section 4(d) of the ESA directs FWS to issue regulations deemed "necessary and advisable to provide for the conservation of [threatened] species." 16 U.S.C. § 1533(d).

[46] *See* Commission staff's October 31, 2019 Memorandum on *Updated List of Threatened, Endangered, Candidate, and Proposed Species; and Verification Letter for the Project Under the January 5, 2016 Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat*.

[47] Endangered and Threatened Wildlife and Plants; Endangered Species Status for Northern Long-Eared Bat, 87 Fed. Reg. 73,488 (Nov. 30, 2022). On January 25, 2023, the FWS delayed the effective date of the final rule reclassifying the northern long-eared bat as endangered from January 30, 2023 to March 31, 2023. Endangered and Threatened Wildlife and Plants; Endangered Species Status for Northern Long-Eared Bat; Delay of Effective Date, 88 Fed. Reg. 4908 (Jan. 26, 2023).

[48] *See* Commission staff's April 13, 2023 Memorandum on *Streamlined Consultation for the Northern Long-Eared Bat Using the Northern Long-eared Bat Rangewide Determination Key*.

75. Tricolored bats are known to occur in 39 states, including Massachusetts.[49] The active season for the tricolored bat is similar to the northern long-eared bat described above. During spring, summer, and fall, tricolored bats roost primarily among leaf clusters of live or recently dead trees, and form summer maternity colonies where young are born.[50]

76. Project maintenance activities that may affect the tricolored bat are the same as those noted above for the northern long-eared bat. In the final EA, staff recommended a seasonal restriction on clearing non-hazardous trees with a diameter at breast height of 3 inches or more, from April 1 through October 31.[51] However, tricolored bats roost in leaf clusters of woody plants, including those smaller than 3 inches in diameter, which could be disturbed by clearing smaller trees. Avoiding the removal or thinning of all non-hazardous trees and woody vegetation during this period would prevent the disturbance of roosting tricolored bats. Therefore, Article 408, which requires Bear Swamp Power to avoid the removal or trimming of all non-hazardous trees from April 1 through October 31, will protect both the northern long-eared bat and the tricolored bat from project effects. Because relicensing this project requires no change to project operation that would affect bats and, considering the limited scope of project effects, relicensing the project is not likely to jeopardize the continued existence of the tricolored bat. Therefore, no further action under the ESA is required.[52]

77. On December 12, 2024, FWS proposed to list the monarch butterfly as threatened. Critical habitat has been proposed in the state of California.

78. Monarch butterflies migrate thousands of miles across North America in the spring and fall. In eastern North America, the monarch butterfly migrates between Mexico and Canada over a period of two to three successive generations. Adult

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[49] FWS, Environmental Conservation Online System, https://ecos.fws.gov/ecp/species/10515. (accessed July 9, 2024).

[50] FWS, Species Status Assessment Report for the Tricolored Bat (*Perimyotis subflavus*), Version 1.1. December 2021. Hadley, MA., https://www.fws.gov/sites/default/files/documents/Tricolored_Bat_SSA.pdf (accessed July 9, 2024).

[51] The final EA was issued before the tricolored bat was proposed for listing under the ESA and, therefore, did not specifically analyze the effects on this species.

[52] For species proposed for listing, a federal agency must confer with FWS only when the agency determines that its action would likely jeopardize the continued existence of the proposed species or destroy or adversely modify proposed critical habitat. 16 U.S.C. § 1536(a)(4).

monarchs are dependent on diverse sources of food, including milkweed (genus *Asclepias*) and nectar-rich flowers. The monarch butterfly breeding season occurs during the summer when the butterflies lay their eggs on milkweed plants. Reproduction is dependent on the presence of milkweed, the sole source of food for monarch larvae (i.e., caterpillars). Larvae emerge from eggs in 2 to 5 days, and then feed on milkweed over a period of 9 to 18 days. The larva then pupates into a chrysalis, emerging 6 to 14 days later as an adult butterfly. Because of the monarch butterfly larva's dependence on milkweed, loss of milkweed host plants due to herbicide use and habitat loss have been identified as contributing factors in the decline of the monarch butterfly.[53] In Massachusetts, the monarch butterfly may be present from July through early October.

79. Project maintenance activities that may affect the monarch butterfly are limited to vegetation management, including transmission line clearance and routine trimming around project facilities. Since these activities are confined to transmission corridors and facility areas, effects on monarch butterflies would be minimal and localized. Therefore, relicensing the project is not likely to jeopardize the continued existence of the monarch butterfly.

Historic and Cultural Resources

A. National Historic Preservation Act

80. Under section 106 of the National Historic Preservation Act (NHPA),[54] and its implementing regulations,[55] federal agencies must consider the effect of any proposed undertaking on properties listed or eligible for listing in the National Register, defined as historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Office (SHPO) to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

81. On February 18, 2015, the Commission initiated informal consultation with the SHPO and designated Bear Swamp Power as the non-federal representative for the

[53] FWS, Species Status Assessment Report for the Monarch (*Danaus plexippus*), Version 2.1. September 2020. https://iris.fws.gov/APPS/ServCat/DownloadFile/191345 (accessed March 20, 2025).

[54] 54 U.S.C. § 306108.

[55] 36 C.F.R. pt. 800 (2025).

purposes of conducting section 106 consultation under the NHPA.[56] Bear Swamp Power initiated consultation with the Massachusetts SHPO to identify historic properties, determine the eligibility of cultural resources for listing on the National Register, and assess potential adverse effects on historic properties within the project's area of potential effects (APE).[57] Archaeological evaluations, conducted by Bear Swamp Power, in consultation with the SHPO, concluded that there are 15 historic properties that are eligible for listing on the National Register within the APE, including the Hoosac Tunnel National Register Historic District.[58]

82. In the final EA,[59] Commission staff concluded that relicensing the project could have an adverse effect on historic properties that are listed on or eligible for listing on the National Register. Adverse effects could occur from modifications to project facilities or project operation, project-related ground disturbance, construction of project recreation facilities and use of facilities by visitors, and project-induced shoreline erosion. In addition, the project facilities will reach 50 years in age during a new license term and may qualify for listing on the National Register at that time based on criteria listed under 36 C.F.R. § 60.4.[60] In the final EA, staff recommended development of an HPMP to ensure that project-related adverse effects on historic properties or previously undiscovered archaeological resources would be adequately addressed over the term of a subsequent license. The HPMP would also provide for reevaluation of historic properties during the term of the license due to the passage of time (i.e., project facilities reaching 50 years in age) or changes in the property's integrity.[61]

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[56] Commission staff's February 18, 2015 Notice of Intent to File License Application, Filing of Pre-Application Document (PAD), Commencement of Pre-Filing Process, and Scoping; Request for Comments on the PAD and Scoping Document, and Identification of Issues and Associated Study Requests.

[57] The project's APE includes lands enclosed by the project boundary, and lands outside the project boundary where the authorized project uses may cause changes in the character or use of historic properties, if historic properties exist. Final EA at 229–230.

[58] Final EA at 227–228.

[59] *Id*. at 230.

[60] *Id*.

[61] *Id.*

83. Commission staff issued a draft Programmatic Agreement (PA) for the project on November 1, 2019, that included stipulations for developing an HPMP. The Massachusetts SHPO filed comments on the draft PA on December 16, 2019.

84. On March 27, 2020, staff responded to the SHPO's comments and issued a final PA. The Massachusetts SHPO filed additional comments on the final PA on May 4, 2020. On March 25, 2021, staff responded to the SHPO's comments and issued a final PA for signature.

85. On April 27, 2021, the Massachusetts SHPO signed the PA. Bear Swamp Power did not respond to the final PA. The PA requires the licensee to prepare an HPMP for the project and, upon Commission approval, implement the HPMP for the term of the new license. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 411 requires the licensee to implement the PA and file the HPMP, for Commission approval, within one year of license issuance.

B. Tribal Consultation

86. Commission staff offered to initiate consultation with the Stockbridge-Munsee Community Band of Mohican Indians on April 9, 2014. The Stockbridge-Munsee Community Band of Mohican Indians did not respond to the initial consultation letter.

87. On December 19, 2014, Bear Swamp Power provided the notice of intent (NOI) and pre-application document (PAD) for the project's relicensing to the Stockbridge-Munsee Community Band of Mohican Indians. On February 18, 2015, the Commission issued a public notice of the NOI and PAD and solicited scoping comments and additional study requests. The Stockbridge-Munsee Community Band of Mohican Indians did not file any comments in response to the notice.

88. On March 30, 2018, Bear Swamp Power provided the license application to the following federally recognized Tribes (Tribes) for review and comment: Stockbridge-Munsee Community Band of Mohican Indians, the Wampanoag Tribe of Gay Head (Aquinnah), and the Narragansett Indian Tribe. None of the Tribes filed comments.

89. The draft PA was sent to the Tribes on November 1, 2019. None of the Tribes filed comments on the draft PA. The final PA was sent to the Tribes on March 25, 2021, and the Tribes were invited to be concurring parties to the PA.[62] None of the Tribes filed a response with the Commission or elected to be a concurring party to the PA.

[62] Under section 800.6(c)(2) of the regulations implementing section 106 of the NHPA, federal agencies are not required to invite a Tribe to become a signatory to a PA

Recommendations of Federal and State Fish and Wildlife Agencies Pursuant to Section 10(j) of the FPA

90. Section 10(j)(1) of the FPA[63] requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act,[64] to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

A. Interior's Recommendations

91. In response to the Commission's January 30, 2019 public notice that the application was ready for environmental analysis, Interior filed six section 10(j) recommendations on March 27, 2019:

(1) operate the Fife Brook Development in a run-of-release mode such that at all times, inflow received from the Deerfield Station No. 5 matches outflow from the Fife Brook dam;

(2) provide a continuous minimum flow of 125 cfs downstream of the Fife Brook Development from April 16 through October 31;

(3) provide a continuous minimum flow of 350 cfs downstream of the Fife Brook Development from November 1 through April 15 to protect incubating trout eggs;

(4) protect state listed dragonflies by:

a. releasing flows from Fife Brook dam between 7 a.m. and 4 p.m. from May 15 through June 30 with an up-ramping rate that is not greater than either: (1) 0.72 inch per hour; or (2) 130 cfs per hour (not to exceed 32 cfs per 15-minute period); and

b. releasing flows from Fife Brook dam between 7 a.m. and 4 p.m. from July 1 through August 31 with an up-ramping rate that is not greater than either: (1) 4 inches per hour; or (2) 158 cfs per hour (not to exceed 40 cfs per 15-minute period); [65]

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when the proposed activity is not located on tribal lands within Indian reservations. The Bear Swamp Project is not located on tribal lands within an Indian reservation.

[63] 16 U.S.C. § 803(j)(1).

[64] *Id.* at §§ 661 *et seq*.

[65] Exceptions to the ramping rates are allowed for purposes of providing 106 scheduled flow releases from the Fife Brook dam for whitewater recreation, as long as

(5) develop an operation compliance monitoring plan for maintaining and monitoring flow releases, including procedures for recording and reporting data to the Commission and resource agencies; and

(6) develop a bat management plan.

92. Of the six recommendations, Recommendation 6, to develop a bat management plan, is outside the scope of section 10(j) because it is not a specific measure to protect, mitigate damages to, or enhance fish and wildlife but rather is a general measure specifying the development of a plan with no specific wildlife measures identified as provisions of the plan.[66] It is discussed in the next section under the broad public-interest standard of section 10(a)(1) of the FPA.

93. This license includes conditions consistent with two of the five remaining recommendations that fall within the scope of section 10(j): Recommendation 2, to provide a seasonal minimum flow release of 125 cfs (Appendix A, condition 3); and Recommendation 5, to develop an operation compliance monitoring plan (Appendix A, condition 4(A)(3); Article 404).

94. In the final EA,[67] Commission staff made a preliminary determination that the remaining three recommendations (Recommendation 1, to operate in run-of-release mode at all times; Recommendation 3, to provide a 350-cfs seasonal minimum flow; and Recommendation 4, to implement protective measures for state-listed dragonfly species) are inconsistent with the comprehensive planning standard of section 10(a)(1) and the public interest standard of section 4(e) of the FPA because the benefits of the recommended measures do not justify their costs.

B. Massachusetts DFW's Recommendations

95. Massachusetts DFW filed 16 section 10(j) recommendations on April 1, 2019, and modified its recommendations on December 16, 2019:

(1) operate the Fife Brook Development in a run-of-release mode such that inflow received from the Deerfield Station No. 5 at all times, matches outflow from the Fife Brook dam;

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certain schedule adjustments are implemented from May through August. *See* Interior Mar. 27, 2019 Comments.

[66] Recommendations under section 10(j) must be specific measures. *See,* e.g., *Ala. Power. Co.*, 153 FERC ¶ 61,298, at PP 70-71 (2015) (rejecting a section 10(j) recommendation as unduly vague), *order on reh'g*, 157 FERC ¶ 61,100 (2016).

[67] Final EA at 287–326.

(2) provide a continuous minimum flow of 125 cfs downstream of the Fife Brook Development from April 16 through October 31;

(3) provide a continuous minimum flow of 350 cfs downstream of the Fife Brook Development from November 1 through April 15 to protect trout incubating trout eggs;

(4) protect state listed dragonflies by:

a. providing scheduled whitewater flow releases at 10 a.m. and restrict outflow from the Fife Brook dam to the 125-cfs minimum flow until 1 p.m. or later on days when there are no scheduled whitewater flow releases during the dragonfly emergence periods of mid-May through mid-June and early July through the end of August; and

b. scheduling the guaranteed whitewater flow release days in May, June, and July to reduce the number of whitewater flow days occurring during the peak emergence periods for the state-listed *Ophiogomphus carolus* (*O. carolus*) and *Boyeria grafiana* (*B. grafiana*); [68]

(5) develop an operation compliance monitoring plan for maintaining and monitoring flow releases, including procedures for recording and reporting data to the Commission and resource agencies;

(6) develop a dragonfly flight and emergence survey plan;

(7) develop a special status dragonfly habitat enhancement plan;

(8) establish a 200-foot, natively vegetated buffer zone on all riverfront lands within and downstream of the project boundary;

(9) provide a rare dragonfly species mitigation fund;

(10) develop an invasive wildlife species monitoring and management plan;

(11) develop a bat management plan;

(12) develop a special status plant management plan;

(13) develop an invasive plant species monitoring and management plan that includes the following measures:

a. (1) educate recreational users on ways to reduce the spread of invasive plant species; (2) implement "best management practices,"

[68] Exceptions to the ramping rates are allowed for purposes of providing 106 scheduled flow releases from the Fife Brook dam for whitewater recreation, as long as certain schedule adjustments are implemented from May through August. *See* Interior's comment letter filed March 27, 2019.

such as identifying invasive plant species that may be introduced by a given project-related activity, identifying critical control points (locations and times), and implementing measures to prevent the spread of invasive plant species during routine project operation and maintenance activities; (3) record incidental observations of invasive plant species; and (4) use only seed and plant materials outside of lawn areas to those found to be native to the county in the then-current Vascular Plants of Massachusetts; and

b. (1) conduct a comprehensive survey of invasive plants every 5 years that would be used to develop site-specific control/management actions to reduce the spread of invasive species at the project; and (2) plant and seed areas after implementing invasive species control techniques;

(14) develop a bald eagle protection plan with provisions to: (1) avoid killing, injuring, or harassing bald eagles during tree cutting or thinning operations; and (2) minimize project effects on nesting bald eagles;

(15) renew the existing conservation easement on 1,264 acres of land, or transfer lands to a qualified conservation entity for perpetual conservation; and

(16) allow Massachusetts DFW and FWS to inspect the project and request pertinent records for the purpose of monitoring compliance with the terms and conditions of a new license.

96. Out of Massachusetts DFW's 16 recommendations, all or part of 10 of the recommendations are outside the scope of section 10(j). Recommendation 6, to develop a dragonfly flight and emergence survey plan, is outside the scope of section 10(j) because the recommended study is not specifically designed to either provide project-related protection, mitigation, or enhancement of fish and wildlife resources, or to measure compliance with or the success of a specific project-related protection, mitigation, or enhancement measure for fish and wildlife resources.[69] Recommendation 7, to develop a special status dragonfly habitat enhancement plan, is outside the scope because it is not a specific fish and wildlife measure, and there is no nexus between a project effect on fish and wildlife and the recommended measure.

[69] Study recommendations must be specifically designed to protect, mitigate damages to, or enhance fish and wildlife. In this instance, Massachusetts DFW did not provide any information about a study design or performance measures that could distinguish the effects of project operation on dragonfly species from non-project effects. *See,* e.g., *Wisc. Elec. Power Co.*, 73 FERC ¶ 61,346, at 62,006 n.58 (1995) (rejecting 10(j) study recommendation because it was not specifically designed to protect, mitigate damages to, or enhance fish and wildlife).

Recommendations 8 and 15 are outside the scope because there is no nexus between a project effect on fish and wildlife and the recommended measure.[70] Recommendation 9, to provide a rare dragonfly species mitigation fund, is outside the scope of section 10(j) because the set-aside of money for the development of a fish and wildlife enhancement fund is not a specific fish and wildlife measure.[71] Part of Recommendation 10, to develop an invasive wildlife species monitoring and management plan for non-mussel species, and Recommendations 11 and 16 are outside the scope of section 10(j) because they are not specific measures to protect, mitigate damages to, or enhance fish and wildlife.[72] Recommendation 12 is outside the scope because there is no indication that the state-listed rare plants referred to in the recommendation provide habitat for fish or wildlife.[73] Part of Recommendation 13, to conduct comprehensive surveys of invasive plants, is outside the scope of section 10(j) because the recommended study is not specifically designed to either provide project-related protection, mitigation, or

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[70] *See,* e.g., *Pub. Util. Dist. No. 1 of Douglas Co., Wash.*, 141 FERC ¶ 62,104, at P 81 (2012) (rejecting 10(j) recommendation because there was no nexus to the project's effects or purposes); *Pub. Util. Dist. No. 1 of Cowlitz Co., Wash.*, 123 FERC ¶ 62, 259, at PP 19-20 (2008); *Big Bear Area Regional Wastewater Agency*, 57 FERC ¶ 62,195, at 63,406 (1991) (same).

[71] *See,* e.g., *PacifiCorp Pub. Util. Dist. No. 1 of Cowlitz Co., Wash.*, 123 FERC ¶ 62,260, at P 96 (2008) ("The Aquatics Fund is not within the scope of section 10(j), in that the fishery measures lack specificity."); *Eugene Water & Elec. Board*, 81 FERC ¶ 61,270, at 62,337 (1997) (citing *City of Augusta, Ky.*, 72 FERC ¶ 61,114, at 61,601 (1995)) ("As for the assertion that the funding recommendation warranted section 10(j) treatment, we have previously held that a recommendation that the licensee fund resource measures is not a section 10(j) recommendation."). However, Massachusetts DEP's certification condition 7 (Appendix A) requires Bear Swamp Power to contribute to a dragonfly mitigation fund, which appears similar to Massachusetts DFW's recommended rare dragonfly species mitigation fund and is included in the license because it is mandatory under section 401 of the CWA.

[72] Recommendations under section 10(j) must be specific measures. *See,* e.g., *Ala. Power. Co.*, 153 FERC ¶ 61,298, at PP 70–71 (2015) (rejecting a section 10(j) recommendation as unduly vague), *order on reh'g*, 157 FERC ¶ 61,100 (2016).

[73] *See,* e.g., *City of Seattle, Wash.*, 142 FERC ¶ 62,231, at 64,549 n.97 (2013) ("Measures intended to protect and enhance plants are generally not considered under section 10(j) unless the species can be reasonably shown to provide habitat for fish or wildlife."); *N.E.W. Hydro, Inc.*, 81 FERC ¶ 61,238, at 61,991, 62,018 (1997) (rejecting 10(j) recommendation in part because it was unlikely to provide habitat enhancement).

enhancement of fish and wildlife resources.[74] These measures are discussed in the next section under the broad public-interest standard of section 10(a)(1) of the FPA.

97. Of the remaining recommendations that fall within the scope of section 10(j), this license includes all or part of five: Recommendation 2, to provide a seasonal minimum flow release of 125 cfs (Appendix A, condition 3); Recommendation 5, to develop an operation compliance monitoring plan (Appendix A, condition 4A(3); Article 404); Recommendation 10, to develop an invasive aquatic wildlife species monitoring and management plan (Appendix A, condition 11); the part of Recommendation 13 that stipulates measures to educate recreational users on invasive species, use of best management practices, recording invasive plant species observations, and use of native plant seed (Article 401); and Recommendation 14, to develop a bald eagle protection plan with provisions to avoid killing, injuring, or harassing bald eagles during tree cutting or thinning operations; and minimize project effects on nesting bald eagles (Article 407).[75]

98. In the final EA,[76] Commission staff made a preliminary determination that the remaining three recommendations (Recommendation 1, to operate in a run-of-release mode at all times; Recommendation 3, to provide a 350-cfs seasonal minimum flow; and Recommendation 4, to implement protective measures for state-listed dragonfly species), are inconsistent with the comprehensive planning standard of section 10(a)(1) and the public interest standard of section 4(e) of the FPA because the benefits of the recommended measures do not justify their costs.

C. Determinations of Inconsistency

99. If the Commission believes that any section 10(j) recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, section 10(j)(2) requires the Commission and the agencies to attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies.[77] If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part I of the FPA or other applicable law and how the conditions imposed by the Commission

[74] Study recommendations must be specifically designed to protect, mitigate damages to, or enhance fish and wildlife. *See,* e.g., *Wisc. Elec. Power Co.*, 73 FERC ¶ 61,346, at 62,006 n.58 (1995) (rejecting 10(j) study recommendation because it was not specifically designed to protect, mitigate damages to, or enhance fish and wildlife).

[75] Final EA at 273.

[76] *Id*. at 287-317 and 318-326.

[77] 16 U.S.C. § 803(j)(2).

adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources.

100. By letters dated November 1, 2019, Commission staff advised Interior and Massachusetts DFW of the preliminary determinations of inconsistency, asked whether those agencies were satisfied with the alternative conditions set forth in the EA, and offered a meeting to attempt to resolve the apparent inconsistencies.

101. On December 13, 2019, Interior filed comments on the draft EA; however, Interior did not file modified recommendations or request a meeting to attempt to resolve the inconsistencies. Therefore, the inconsistencies regarding operation in a run-of-release mode at all times (Interior's Recommendation 1), the seasonal minimum flow (Interior's Recommendation 3), and state-listed dragonfly protective measures (Interior's Recommendation 4) could not be resolved. As discussed below, one of the recommendations (Interior's Recommendation 1) is included in the license as a mandatory condition and two of the recommendations are not required.

102. On December 16, 2019, Massachusetts DFW filed modified recommendations, but did not request a meeting to resolve the inconsistencies. Therefore, the inconsistencies regarding the seasonal minimum flow (Massachusetts DFW's Recommendation 3), state-listed dragonfly protective measures (Massachusetts DFW's Recommendation 4), and run-of-release operation (Massachusetts DFW's Recommendation 1) could not be resolved. One of the recommendations (operating the project in run-of-release mode) is included in the license as a mandatory condition pursuant to Massachusetts DEP's certification condition 2 (Appendix A). The remaining two recommendations are not required. In accordance with section 10(j)(2)(B) of the FPA, the measures required by this license, including Article 403 and Massachusetts DEP's certification conditions 3, 5A, and 5B (Appendix A), will adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources affected by the project.

Section 10(a)(1) of the FPA

103. Section 10(a)(1) of the FPA[78] requires that any project for which the Commission issues a license be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

[78] 16 U.S.C. § 803(a)(1).

A. Bear Swamp PSD Upper Reservoir Impoundment Elevations

104. Under current operation, Bear Swamp Power operates the Bear Swamp PSD by pumping water from the Fife Brook impoundment (i.e., the lower reservoir) during periods of low electricity demand, storing the water in the upper reservoir, and then generating electricity by discharging water back into the Fife Brook impoundment during periods of high electricity demand. Bear Swamp Power fluctuates the upper reservoir of the Bear Swamp PSD no more than 50 feet on a daily basis (between 1,550 and 1,600 feet NGVD29). Bear Swamp Power proposes to continue operating the Bear Swamp PSD in the current manner, including maintaining the upper reservoir surface elevation between 1,550 and 1,600 feet NGVD29.

105. The upper reservoir has a surface area of approximately 118 acres at a normal maximum surface elevation of 1,600 feet NGVD. As discussed in the final EA, the aquatic habitat of the upper reservoir is generally classified as lentic (i.e., still-water habitat); however, the upper reservoir experiences frequent water level fluctuations of as much as 44.5 feet on a daily basis due to the Bear Swamp PSD operation (generation and pumping).[79] Gamefish species in the upper reservoir include smallmouth bass, yellow perch, and brown trout;[80] however, recreational access to the upper reservoir for fishing and other uses is restricted for public safety and security.[81]

106. Continuing to keep the surface elevation of the upper reservoir between 1,550 and 1,600 feet NGVD29, as proposed by Bear Swamp Power, would maintain the current environmental conditions at the upper reservoir.[82] Therefore, Article 403 requires that Bear Swamp Power maintain the surface elevation of the upper reservoir of Bear Swamp PSD between 1,550 and 1,600 feet NGVD 29.

B. Run-of-Release Operation

107. When necessary, Bear Swamp Power stores some inflow to the Fife Brook impoundment to replenish impoundment water lost to evaporation and to maintain up to 150 acre feet of water in the impoundment to be later released when inflow is insufficient to provide a 125-cfs minimum flow release to the river reach downstream of Fife Brook

[79] Final EA at 45.

[80] *Id.* at 56.

[81] *Id.* at 185.

[82] *Id.* at 105-106.

dam.[83] When not storing water for the aforementioned purposes, Bear Swamp Power operates the Fife Brook impoundment in a "run-of-release mode reacting to, and passing, peaking generation inflows from [Deerfield] Station No. 5." Bear Swamp Power proposes to continue operating in this manner.

108. Massachusetts DFW and Interior recommend, pursuant to section 10(j), that Bear Swamp Power operate the project in a run-of-release mode at all times. The agencies are concerned that Bear Swamp Power's proposed mode of operation of the Fife Brook Development, including storage of up to 150 acre-feet of inflow for later downstream releases for the protection of aquatic resources, would continue to result in significant water level fluctuations in the Deerfield River downstream of Fife Brook dam that adversely affect aquatic habitat, trout, and sensitive dragonflies.

109. In the final EA, staff noted that when the reservoir is being replenished, outflow from the Fife Brook dam is less than inflow to the impoundment, and that the replenishment temporarily causes depleted downstream flow which adversely effects downstream aquatic habitat.[84] But the final EA also explained that eliminating the ability to replenish the impoundment through the recommended run-of-release requirement would eventually deplete the impoundment, hindering the ability of the pumped storage development to generate and hindering the ability of Bear Swamp Power to release flows downstream during low inflow periods, resulting in adverse effects on downstream aquatic resources and whitewater boating.[85] Therefore, on balance, the final EA recommended Bear Swamp Power's proposed operation over that of Massachusetts DFW and Interior's recommendation.[86]

110. Subsequent to issuance of the final EA, Massachusetts DEP issued a water quality certification for the Bear Swamp Project. Massachusetts DEP's certification condition 2 requires Bear Swamp Power to operate the Fife Brook Development in a run-of-release mode, passing minimum flows received from the Deerfield Station No. 5, and to store the 150-acre-feet of "positive balance" using inflow from Deerfield Station No. 5. Condition 2 is identical to the staff alternative and is required pursuant to the Clean Water Act, as set forth in Appendix A of this order and incorporated into the license by Ordering Paragraph (D).

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[83] *Id.* at 290-291.

[84] *Id.* at 289-290.

[85] *Id.* 291.

[86] *Id*. at 290-291.

C. Minimum Flows Downstream of Fife Brook Dam

111. Bear Swamp Power proposes to continue to release a minimum flow of 125 cfs from the Fife Brook development at all times to protect aquatic habitat in the Deerfield River. When inflow is insufficient to release 125 cfs, Bear Swamp Power proposes to continue utilizing 150 acre-feet of storage in Fife Brook impoundment to supplement inflow in order to provide a full flow of 125 cfs.

112. Massachusetts DFW and Interior, pursuant to section 10(j), recommend that Bear Swamp Power release a continuous minimum flow of 125 cfs from April 16 through October 31, and 350 cfs from November 1 through April 15, from the Fife Brook impoundment to the Deerfield River to ensure adequate water depth for trout redds. Trout Unlimited and CRC recommended the same measure as Massachusetts DFW and Interior for the protection of spawning trout, incubating eggs, and emerging fry. Massachusetts DEP's certification condition 3 requires Bear Swamp Power to continue to release a 125-cfs minimum flow at all times from the Fife Brook Development. Massachusetts DEP's certification condition 4 requires that from November 1 of each year through April 15 of the following year, Bear Swamp Power maintain a minimum flow of 225 cfs, from and as measured at the Fife Brook dam, for the overwintering protection of trout redds. Condition 4 adds that the provision of 225 cfs shall not compromise Bear Swamp Power's ability to provide 125 cfs and that it is not expected to use more than 150 acre-feet of storage to supplement low inflow in order to provide the full 225-cfs flow. Condition 4 also provides daily procedures for reducing the 225-cfs flow down to 125 cfs to replenish the 150-acre-feet storage, as necessary, to be available the following day.

113. The final EA evaluated the benefits and costs, including the effects on trout redds and aquatic habitat, of the downstream minimum flow alternatives.[87] Condition 3 of Massachusetts DEP's water quality certification is consistent with Black Swamp Power's proposed minimum flow release of 125 cfs. The final EA noted that a minimum flow release of 125 cfs provides a suitable amount of habitat for reproduction and the survival of all age classes of trout species.[88] Staff found that a flow of 350 cfs would not increase the amount of trout spawning habitat, because the wetted width and depth of the Deerfield River does not significantly increase from 125 cfs to 350 cfs.[89] With regard to habitat suitability, a flow of 350 cfs would increase depth suitability for the non-native rainbow trout and brown trout relative to a flow of 125 cfs but would increase velocity,

[87] The final EA did not analyze Massachusetts DEP's water quality certification conditions because at that time the certification had not been issued.

[88] Final EA at 121.

[89] *Id.*

which would adversely affect native brook trout habitat during the winter. These adverse effects to brook trout could, over time, shift the trout population of the Deerfield River to the non-native species, which could negatively affect fishing.[90] Staff concluded that providing a minimum flow of 350 cfs to protect overwintering trout redds would reduce generation by 3,640 MWh per year, which is equivalent to the average annual electricity usage of approximately 346 U.S. households.[91] Based on rainbow trout and brown trout habitat suitability data,[92] releasing a minimum flow of 225 cfs from the Fife Brook Development from November 1 through April 15, as required by Massachusetts DEP's certification condition 4, would provide similar benefits to rainbow trout and brown trout compared to a flow of 350 cfs. Brook trout would also experience adverse effects similar to those experienced at a flow of 350 cfs (i.e., unsuitable water velocities). A seasonal minimum flow of 225 cfs would result in 1,620 MWh in reduced generation per year, which is equivalent to the average annual electricity usage of approximately 154 U.S. households.

114. Considering that the benefits and environmental costs of a seasonal minimum flow of 225 cfs are similar to that of a 350-cfs minimum flow and considering that the incremental lost generation of the 225-cfs seasonal flow would be 1,620 MWh, the most appropriate balance of the minimum flow alternatives would be struck by a year-round continuous flow release of 125 cfs. Nevertheless, condition 3 and the higher seasonal flows required by condition 4 are license requirements pursuant to the CWA, as set forth in Appendix A of this order and incorporated into the license by Ordering Paragraph (D).

D. Ramping Recommendations

115. Under current operation, Bear Swamp Power opens the wicket gates in the turbine and releases generation flow up to 3 MW to avoid sudden increases in flow downstream of the Fife Brook Development.[93] Upon reaching 3 MW, Bear Swamp Power pauses for 15 minutes and then begins ramping the flow release to a desired generation set point, which can be as high as 10 MW.[94] Bear Swamp Power provides the 15-minute pause as

[90] *Id.* at 292.

[91] The U.S. Energy Information Administration (EIA), Annual Energy Outlook 2023 estimates that a typical U.S. household uses an average of 10.5 MWh of energy per year.

[92] Final EA at 78-79, Figures 10 and 11.

[93] *Id.* at 72.

[94] As discussed in P 27, *supra*, Bear Swamp Power does not run the turbine-generator at the Fife Brook Development below an output of approximately 3 MW due to rough operating conditions that are encountered when output reaches this level. A

an in-water safety measure to alert anglers to rising water levels from a flow release for generation. Several entities express interest in potentially enhancing environmental conditions for aquatic resources while considering how ramping alternatives would affect project generation and recreation downstream of the Fife Brook Development.

116. Bear Swamp Power proposes to discontinue holding the generator at 3 MW for 15 minutes and instead, use only existing flashing warning lights and sirens in the tailrace of the Fife Brook dam to alert recreation users when higher flows are released from Fife Brook dam. Under Bear Swamp Power's proposal, the magnitude of the change in generation release flows would remain the same, but the rate of change would increase.[95]

117. To protect newly emerged trout fry from being washed downstream when releasing generation flows or from being stranded in shallow areas when reducing generation flows, Trout Unlimited recommends a 1-hour ramp up and a 1-hour ramp down of generation flows from March 15 through June 30, when newly emerged trout fry are present.

118. To protect emerging and eclosing state-listed dragonflies in the Deerfield River downstream of the project,[96] Interior recommends, under section 10(j), that Bear Swamp Power restrict flow releases from Fife Brook dam on unscheduled whitewater release days by limiting the ramping rate of the flows between the hours of 7 a.m. to 4 p.m. to 0.72 inch per hour or 130 cfs per hour (not to exceed 32 cfs per 15-minute period) from May 15 through June 30, and 4 inches per hour or 158 cfs per hour (not to exceed 40 cfs per 15-minute period) from July 1 through August 31.

119. To protect aquatic resources, including state-listed dragonflies, and enhance safety for recreational users downstream of the Fife Brook Development, CRC recommends a staged ramping process for increasing flows, which would include a 1-hour hold at an

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generator output of 3 MW is equivalent to a discharge of between 270 cfs and 650 cfs from the Fife Brook dam, depending on the elevation of the impoundment.

[95] Final EA at 88-89.

[96] Dragonflies have a two-part life cycle with an aquatic larval stage and an aerial adult stage. At the end of the larval period, the larvae crawl out of the water (i.e., emergence) onto vegetation, rocks, shoreline substrate, or bridge abutments to metamorphose into adults. Some species shed their exoskeleton (i.e., eclosure) close to the water's surface, and other species climb considerable distances vertically and/or horizontally from the water's edge. Until its exoskeleton hardens, the dragonfly cannot fly and is susceptible to predation and being washed away and drowned by waves or rising water levels. The time between emergence and flight is approximately 1 to 2 hours for both species. Final EA at 64.

intermediate flow that is equivalent to the midpoint of the total scheduled flow. CRC recommends two intermediate flow releases of one hour for unspecified "higher operational flows."[97] Lastly, CRC recommends a down-ramping hold period of 30 minutes.

120. In the final EA,[98] staff concluded that Bear Swamp Power's proposal to discontinue its practice of holding the generator at 3 MW for 15 minutes before increasing generation to higher output levels would eliminate the existing visible cue of rising water (i.e., inundation of rocks and landmarks, increase in water turbulence, change in water clarity, movement of debris, audible change in flow, shifting waterlines on the bank, temperature change [colder water from dam release]). This visible cue acts as an additional safety measure that provides an observable warning to downstream recreation users who may not see the strobe lights at Fife Brook dam or hear the audible warning siren indicating that water levels will soon rise, which could adversely affect user safety downstream of the dam. In addition, continuing the 15-minute hold would continue to provide time for fish and macroinvertebrates to find refuge as flows increase and would maintain current water quality conditions in the Fife Brook impoundment and downstream of the Fife Brook Development.[99]

121. Staff found that Trout Unlimited's recommendation was similar to current operation and provided no additional benefit to trout fry.[100] The generator ramping limits recommended by Interior would attenuate water level fluctuations downstream of Fife Brook dam more consistently than Bear Swamp Power's existing and proposed modes of operation and would provide the most protection for emerging and eclosing dragonflies downstream of the project. However, Interior's recommendation would adversely affect whitewater boating, whitewater boating outfitters, project generation, and generation at the hydropower developments downstream of Fife Brook dam.[101]

122. As discussed in the final EA,[102] the generator ramping limits recommended by CRC would attenuate water level fluctuations downstream of Fife Brook dam more consistently than Bear Swamp Power's existing operation and, therefore, would provide

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[97] CRC April 1, 2019 Comments at 5.

[98] Final EA at 281-282 and 298-301.

[99] *Id.* at 72, 89, 94, 97, 106, and 118.

[100] *Id.* at 90; Bear Swamp Power's December 16, 2019 comments on the draft EA.

[101] Final EA at 297-299.

[102] *Id.* at 299-300.

greater protection of dragonflies and fish. However, CRC's recommended 1-hour hold during up-ramping would adversely affect project generation at the Fife Brook Development and reduce the storage capacity of the Fife Brook impoundment for generation flows from the Bear Swamp PSD.

123. Given the benefits and costs of the ramping proposal and alternatives, staff concluded that the staff alternative, which includes continuing Bear Swamp Power's current practice of holding the generator at 3 MW for 15 minutes, balances the protection of aquatic resources, including trout fry and state-listed dragonflies, and the effects on whitewater boating, downstream recreation users, and project generation.[103] Therefore, Article 403 of this license requires Bear Swamp Power to continue to ramp its generator at the Fife Brook Development to 3 MW and hold the 3-MW level for 15 minutes before increasing generation to higher output levels.

E. Dragonfly Surveys

124. Massachusetts DFW recommends that Bear Swamp Power develop, in consultation with Massachusetts DFW and FWS, a dragonfly flight and emergence survey plan to assess state-listed dragonflies every three years and ensure that state-listed dragonfly habitat utilization along the river remains stable or increases.

125. In the final EA,[104] staff concluded that the recommended measure would not directly provide a project-related benefit because the measure is too general and does not isolate for project-related effects on dragon flies. Moreover, there is no project-related need for surveys of dragonflies at and near the project. Therefore, this license does not require Bear Swamp Power to conduct dragonfly population surveys.

F. Special Status Dragonfly Habitat Enhancement

126. Massachusetts DFW recommends that Bear Swamp Power develop a plan to increase the population of state-listed dragonflies on project lands and lands over which conservation easements are established or re-established. Massachusetts DFW states that the plan must include a list of species to be enhanced, and identification of suitable habitat sites for site-specific enhancement measures. Massachusetts DFW also states that enhancement measures may include removal of flow restrictions in the watershed, restoring native vegetation to riparian corridors and floodplains, measures to retain large woody debris within the Deerfield River, mid-channel emergence habitat enhancements to

[103] *Id.* at 281-282 and 298-301.

[104] *Id.* at 146-147 and 301-302.

raise substrate above spring flood levels, and other conservation measures to benefit state-listed dragonflies directly.

127. As described in the final EA,[105] while current operation can inundate and wash away emerging and eclosing dragonflies, there is no evidence in the record that suggests that a lack of larval, emerging, foraging, or mating habitat limits the populations of *B. grafiana* and *O. carolus* in the Deerfield River downstream of Fife Brook dam. Given that these species emerge and eclose relatively close to the water's surface, there is no indication that providing additional emergence habitat would increase the species population size. In addition, Massachusetts DEP's certification conditions 5A and 5B (Appendix A) specify that Bear Swamp Power provide scheduled whitewater releases at 11:30 a.m., and stable or diminishing flow from 7:00 a.m. through 11:30 a.m., which would provide additional time for dragonflies to complete emergence and eclosure at locations 6 to 8 miles downstream of Fife Brook dam compared to current operation. Therefore, there is no project-related need for the recommended dragonfly habitat enhancement measure and this license does not require it.

G. 200-foot Vegetated Riparian Buffer Zone

128. To protect fish and wildlife resources and allow for habitat management, Massachusetts DFW recommends that Bear Swamp Power establish a 200-foot, natively vegetated buffer zone on all riverfront land within the project boundary and acquire permanent easements on non-project lands within 200 feet of the Deerfield River as measured from the top of the banks. Massachusetts DFW states that permanent conservation easements along the primary tributaries[106] upstream of the town of Shelburne Falls[107] would also be protective. Massachusetts DFW recommends that Bear Swamp Power establish a fund for this purpose.

129. As described in the final EA,[108] permanent conservation easements exist for 201 acres in the riparian zone within the project boundary downstream of Fife Brook dam. In order to protect a 200-foot riparian buffer zone along both banks of the Deerfield River, Bear Swamp Power would have to purchase or acquire conservation easements for

[105] *Id.* at 147-148.

[106] Massachusetts DFW listed the following as tributaries of interest: Pelham Brook, Cold River, Mill Brook, Hawks Brook, Wilder Brook, Clesson Brook, Chickley River, and North River.

[107] Shelburne Falls is a town located approximately 20.8 miles downstream of Fife Brook dam.

[108] Final EA at 148-150.

approximately 129 acres of additional land along the river to the downstream edge of the project boundary and more than 678 acres of land downstream of the project boundary to Shelburne Falls.

130. Nothing in the record indicates any potential future development plans along the riparian buffer within the project boundary. Moreover, Massachusetts DFW did not describe how the additional riparian buffer on nearly 800 acres of non-project lands would mitigate for specific project effects, or how including these lands in the project boundary would otherwise be in the public interest by serving a project-related purpose. Therefore, this license does not require Massachusetts DFW's recommended 200-foot riparian buffer along both banks of the Deerfield River.

H. Aquatic Resource Mitigation and Protection Funds

131. Massachusetts DFW recommends that Bear Swamp Power create a rare species mitigation fund to "fund survey, conservation, and enhancement actions for Special Status odonates [i.e., dragonflies] in the Deerfield Watershed."[109] Massachusetts DFW states that the fund would be administered by Bear Swamp Power and Massachusetts DFW and that a "proposed project must have a clear benefit to Special Status odonates and must be located within the Deerfield River Basin; or in other major river basins in Massachusetts only if the project directly benefits *O. carolus* and/or *B. grafiana*."[110] Similarly, Massachusetts DEP's certification condition 7 requires Bear Swamp Power to provide $33,250 annually to Massachusetts DFW for a dragonfly mitigation fund, unless Massachusetts DFW provides other instructions to Bear Swamp Power, for the term of the license and any extensions.[111] In addition, Massachusetts DEP's certification condition 8 requires Bear Swamp Power to provide $125,000 to Massachusetts DEP, within three years of license issuance, for an aquatic resources protection fund to be used for the protection of aquatic resources in the Deerfield River (condition 8).

132. There are no specific measures to analyze in this case because no entity proposed specific projects to be funded. Consequently, there is no method for assessing the project-related benefits of any future survey, conservation action, or enhancement action on special status dragonfly species or other aquatic resources in the Deerfield River. Therefore, there is no demonstrated project-related need for this measure. Nevertheless,

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[109] Massachusetts DFW 10(j) recommendation 12 filed April 1, 2019.

[110] Page 17 of Massachusetts DFW's April 1, 2019 letter.

[111] The required annual funding is subject to annual inflation adjustments in accordance with the U.S. Consumer Price Index as calculated from the date of license issuance. The amount of the annual funding may be adjusted downward depending on any changes in operation of the Deerfield Station No. 5.

as noted above, Massachusetts DEP's certification conditions 7 and 8 requiring a dragonfly mitigation fund and an aquatic resources protection fund are included in this license as mandatory under section 401 of the CWA and incorporated into the license by Ordering Paragraph D.

I. Instream Flow Study

133. CRC recommends that Bear Swamp Power conduct an Instream Flow Incremental Method (IFIM) modeling study now and when the Deerfield Project begins relicensing in 2032. CRC states that an IFIM modeling study is needed to evaluate alternative flow scenarios during relicensing and during the next relicensing proceeding for the Deerfield Project in order to balance project operation with habitat and recreation interests. Similarly, Trout Unlimited states that an IFIM modeling study is needed to evaluate the effects of hydropower peaking operation and minimum flow releases on trout redds downstream of Fife Brook dam.

134. As described in the final EA,[112] staff found that the results of Bear Swamp Power's Instream Flow Assessment Study were sufficient to determine the benefits of the proposed and recommended minimum flows on aquatic habitat. Staff also stated that CRC's recommendation to complete an IFIM modeling study of the Deerfield River when the Deerfield Project begins relicensing in the future would relate to a future licensing decision. Staff concluded that there is no need to include a license condition requiring an IFIM study, and there is no justification for including CRC's recommended future flow study. Therefore, this license does not require an IFIM modeling study.

J. Bat Management Plan

135. Bear Swamp Power proposes and Interior and Massachusetts DFW recommend the development of a bat management plan. In the final EA, staff concluded that there is no demonstrated project-related need for a bat management plan given staff's related recommendation for seasonal tree clearing restrictions, and therefore, did not recommend a bat management plan.[113] Accordingly, the license does not require one.

K. Optional Bat Surveys

136. Interior recommended a seasonal clearing restriction for all non-hazardous trees from April 1 through October 31, or in the alternative, conducting surveys to confirm that

[112] Final EA at 304.

[113] *Id.* at 305-306.

northern long-eared bats are absent from the project area prior to tree cutting or clearing during the same period.

137. In the final EA, Commission staff concluded that implementing Interior's recommended seasonal clearing restriction without the option for surveys would protect northern long-eared bats at no substantial cost to Bear Swamp Power and recommended it.[114] Subsequently, on December 13, 2019, Interior filed a letter modifying its recommendation by removing the option for surveys and recommending that the license include a seasonal tree clearing restriction from April 1 through October 31 to avoid adverse effects to the northern long-eared bat, consistent with the staff recommendation in the final EA. Because a seasonal clearing restriction without the option to conduct surveys would protect the northern long-eared bat at no substantial cost, Article 408 of this license requires Bear Swamp Power to avoid the removal of non-hazardous trees from April 1 through October 31.

L. State-Listed Rare Plants

138. Bear Swamp Power proposes to develop a state-listed rare plants management plan in consultation with Massachusetts DFW. The plan would include measures to minimize adverse effects on state-listed and special status plants within the project boundary that may result from project-related activities.

139. As discussed in the final EA,[115] developing a plan that provides specific measures would minimize adverse effects on state-listed and special status plants within the project boundary. Staff concluded that the potential benefit to wildlife resources from developing a state-listed rare plants management plan was worth the estimated levelized annual cost of $3,175[116] and recommended it.[117] Article 405 of this license requires the licensee to develop a state-listed rare plants management plan.

M. Invasive Plant Species

140. Bear Swamp Power proposes, Massachusetts DFW recommends, and Massachusetts DEP's certification condition 9 requires that Bear Swamp Power develop an invasive plant species monitoring plan. Under Bear Swamp Power's proposal, the plan would include measures to reduce the spread of invasive plant species, including:

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[114] *Id.* at 274.

[115] *Id.* at 164–165.

[116] All costs presented below have been escalated to 2024 dollars.

[117] Final EA at 250.

(1) educating recreational users on ways to reduce the spread of invasive plant species; (2) implementing best management practices and specific measures to prevent the spread of invasive plant species during routine operation and maintenance; (3) recording observations of invasive plant species; and (4) using only native seed and plant materials outside of lawn areas. Additionally, certification condition 9 requires Bear Swamp Power to provide an initial payment in the amount of $5,000, and annual payments of $2,000 thereafter, to Massachusetts DFW's National Heritage and Endangered Species Program (NHESP) over the term of the license. The funding would be used to conduct invasive plant surveys, mapping, control, management, or eradication, and planning necessary to accomplish those tasks.

141. As discussed in the final EA,[118] more than 30 acres of discrete stands of various invasive species occur along the shorelines of the Deerfield River downstream of the Fife Brook dam. Considering the distribution of invasive plant populations throughout the project boundary and along the Deerfield River, attempting to reduce the prevalence of these species and replanting these areas within the project boundary may not be technically feasible. Further, there is no indication that comprehensive monitoring and/or site-specific control and management actions, as recommended by Massachusetts DFW and required by Massachusetts DEP, are needed to protect fish and wildlife resources. Therefore, Commission staff did not recommend the measure be included in the license. Nevertheless, Massachusetts DEP's certification condition 9 is included in this license as mandatory under section 401 of the CWA.

N. Invasive Aquatic Species

142. Bear Swamp Power proposes to develop an invasive mussel species monitoring and management plan to minimize the spread of invasive mussel species at the project. The proposed plan would include the following measures: (1) educational training for project maintenance staff; (2) educational signage; (3) best management practices for minimizing the spread of invasive mussel species during project-related construction and maintenance activities; and (4) rapid notification, coordination, and response with appropriate federal and state resource agencies in the event invasive dreissenid mussel species (e.g., zebra mussels and quagga mussels) are detected at the project.

143. Massachusetts DFW recommends that Bear Swamp Power develop an invasive wildlife species monitoring and management plan to minimize the spread of invasive dreissenid mussels and other non-indigenous invertebrates (e.g., insects and snails) and vertebrates (e.g., fish) that could adversely affect non-invasive species and adversely affect hydroelectric operation and infrastructure. Massachusetts DEP's certification

[118] *Id.* at 306.

condition 11 also requires Bear Swamp Power to implement an invasive "aquatic wildlife" species monitoring and management plan.

144. In the final EA,[119] staff determined that control measures are needed to minimize the spread of invasive mussel species at the project and that the benefits of invasive mussel monitoring and management would justify its costs. Therefore, staff recommended that the license include provisions for invasive mussel species monitoring and management at the project.

145. Staff also concluded that there is no information in the project record identifying any invasive wildlife species (i.e., snails and insects) that pose a reasonably foreseeable threat to resources at the project.[120] Therefore, staff did not recommend Massachusetts DFW's invasive wildlife species monitoring and management plan and this license does not require it.

146. Massachusetts DEP's certification condition 11 does not identify specific species to be monitored and managed; however, the plan stipulates the monitoring and management of invasive aquatic species, generally, at the project. Therefore, to avoid redundancy and for purposes of administrative efficiency, the license does not require a separate invasive mussel monitoring and management plan as proposed by Bear Swamp Power. Instead, Article 406 requires that the invasive species plan required by certification condition 11 include staff's recommend provisions for monitoring and managing invasive mussel species at the project.

O. Conservation Easement

147. In July 2001, the licensee established a conservation easement on 1,407 acres of land within the project boundary, and 50 acres near the project, but outside the project boundary. Of those 1,407 acres within the prior's license's project boundary, 201 acres of river corridor are subject to in-perpetuity conservation easements, while 1,206 acres near the project's upper and lower reservoirs are subject to conservation easements that carried through the term of the prior license. Bear Swamp Power is not proposing to renew the conservation easement for those 1,206 acres, or the 50 acres that are near the project. Under the new license, Bear Swamp Power is also not proposing to include 161.77 acres of land within the project boundary that are part of the 1,206 acres under the conservation easement and had previously been included in the project boundary under the prior license.

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[119] *Id.* at 271 and 305.

[120] *Id.* at 305.

148. Massachusetts DFW, Interior, CRC, and the Deerfield River Watershed Association recommend, and the Whitewater Interest Group and Franklin Regional Government request, that the 1,256 acres of land be placed under a permanent conservation easement. Interior, CRC, and the Deerfield River Watershed Association also recommend that Bear Swamp Power transfer the land it proposes to not include within the project boundary to a qualified conservation organization. Massachusetts DFW recommends that the entire conservation easement be transferred to a qualified conservation organization if Bear Swamp Power does not want to renew it.

149. The existing conservation easement restricts land use on 1,457 acres to agricultural, forestry, educational, non-commercial recreation, open space, and electric transmission and hydroelectric generation purposes. The majority of land held under the conservation easement is forested. Of the designated uses, electric transmission and hydroelectric generation is the second largest land use.

150. Bear Swamp Power established the conservation easements in response to an April 4, 1997 Commission order, which required the licensee to participate in a conservation easement program for the protection of 1,056 acres of land around the upper and lower reservoirs.[121] The licensee entered into a conservation easement that protected an additional 200 acres around the upper and lower reservoirs, including 50 acres that were not within the prior license's project boundary.[122] Under the new license, Bear Swamp Power is proposing to include 1,044.23 acres around the upper and lower reservoirs within the project boundary, which is approximately 12 acres less than what was required by the Commission's April 4, 1997 order. In the final EA, Commission staff recommended that the project boundary include those 1,044.23 acres to provide a large, unfragmented forested area to protect sensitive species within the project boundary, concluding that the benefits of the measure would be worth the costs.[123] Therefore, Ordering Paragraph (C) approves Bear Swamp Power's proposed project boundary as depicted in its April 30, 2018 Exhibit G project boundary maps, which include those 1,044.23 acres; and Article 412 requires Bear Swamp Power to maintain those lands in substantially the same way that they were used under the prior license (*i.e.*, for agricultural, forestry, educational, non-commercial recreation, open space, and electric transmission and hydroelectric generation purposes), unless otherwise approved by the Commission.

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[121] *See New England Power Co.*, 79 FERC ¶ 61,009 (1997).

[122] No recommendations have been submitted for, or evidence shown as to why, the 50 acres of land that is currently outside of the project boundary is needed for project purposes.

[123] Final EA at 315-317.

151. Regarding the matter of whether three distinct parcels of land that compose 161.77 acres should be included the project boundary under the new license, the final EA noted that the three parcels are located along the border of the existing conservation easement, and no sensitive species were identified as occurring within these areas.[124] Although this land could be used for non-project purposes and has the potential to result in future loss of habitat if the land were to be developed, such development would not be an action under the new license and thus would not be under the Commission's jurisdiction. Moreover, staff concluded that the adverse effect of any non-project development of the land would be minimal because 1,044.23 acres of forested land within the project boundary would provide a large, unfragmented forested area to protect sensitive species within the project boundary. Therefore, staff concluded that the 161.77 acres of land is no longer needed for a project-related purpose and should not be included within the project boundary under the new license. Ordering Paragraph (C) of this license approves the April 30, 2018 Exhibit G project boundary maps that do not include the three parcels of land composing 161.77 acres. Further, for the reasons described above, this license does not require the establishment of a new conservation easement for the original 1,256 acres of land covered by the July 2001 conservation easement, or the transfer of any of those original 1,256 acres to a conservation organization.

P. Recreation Facilities Management Plan

152. Bear Swamp Power currently operates and maintains the following project recreation facilities: (1) Bear Swamp Visitor Center, located on the western shoreline of the lower reservoir; (2) the Fife Brook Fishing and Boating Access Area, located at the southern end of the lower reservoir; (3) the Zoar Whitewater Access Area, located approximately 5.3 river miles downstream of the Fife Brook Development; (4) the Zoar Picnic Area, located approximately 5.8 river miles downstream of the Fife Brook Development; (5) the Bear Swamp Public Hunting Area, located near the upper reservoir; and (6) the Bear Swamp and Hoosac Tunnel Trail, running parallel to the eastern portion of the project. These sites provide non-motorized boating, fishing, tubing, hiking, hunting, biking, whitewater boating, picnicking, and trail running. In addition, there are 10 informal/undeveloped public access areas downstream of Fife Brook dam that provide access to the river and are mainly used by anglers.

153. Bear Swamp Power proposes to develop a recreation facilities management plan that includes provisions for operating, maintaining, and improving project recreation facilities. As discussed in the final EA,[125] there is currently no formal plan for managing project recreation facilities and a recreation facilities management plan would ensure that

[124] *Id*. at 216-219.

[125] *Id.* at 185-186.

project facilities are properly operated and maintained for the term of any new license issued for the project. Staff concluded that Bear Swamp Power's proposed plan, which includes measures for improving site access, safety, and sanitation at recreation sites in the project boundary, would enhance conditions at recreation sites during periods of high demand and is worth the approximate levelized annual cost of $9,001.[126] Article 409 of this license requires the plan.

Q. Recreation Facility Improvements

154. Bear Swamp Power also proposes to install handrails on staircases at project recreation areas and install additional signage to educate recreationists on safety and the Deerfield River flow regime. In the final EA, staff recommended that the recreation facilities management plan, which includes measures for improving site access, safety, and sanitation, and is required by Article 409 of this license, include specific improvements at some of the project recreation sites.

1. Fife Brook Fishing and Boating Access Area

155. To relieve congestion at whitewater access areas during the peak summer season and ensure adequate access is provided during scheduled flow release days, Bear Swamp Power proposes to improve parking at the Fife Brook Fishing and Boating Access Area, but did not provide any specific details about the improvements. In the final EA, staff recommended that Bear Swamp Power improve parking at the site by creating up to 10 additional parking spaces by removing vegetation and placing gravel throughout the parking area, and marking the parking spaces to make the most efficient use of the space.[127] Staff concluded that benefit of improving and increasing parking capacity at the Fife Brook Fishing and Boating Access Area would improve recreation access and is worth the annual levelized cost of $2,035 .[128] Therefore, Article 410 of this license requires the following measures: (1) creating up to 10 additional spaces at the unpaved, overflow parking area by removing vegetation and placing gravel throughout the parking area and (2) marking the parking spaces at the overflow parking area to make the most efficient use of the space.

156. Interior, Massachusetts DFW, and the Whitewater Interest Group recommend that Bear Swamp Power further improve the Fife Brook Fishing and Boating Access Area by: (1) establishing a third boat put-in site, and (2) providing electric power for rafters to run

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[126] *Id.* at 275.

[127] *Id.* at 276.

[128] *Id.* at 276.

air pumps. Interior further recommends that Bear Swamp Power construct a new set of stairs to replace the existing stairs at the access.

157. In the final EA,[129] staff concluded that although adding a third put-in site would decrease congestion and wait time for river access at the two existing put-ins, the third put-in site could result in increased congestion at the Fife Brook Fishing and Boating Access Area. Staff concluded that the benefits of the third put-in site to relieving congestion at the two existing put-in sites would not be worth the cost of increased congestion at the Fife Brook Fishing and Boating Access Area. Therefore, staff did not recommend, and this license does not require, construction of a third put-in site.

158. Regarding providing electric power for rafters to run air pumps at the Fife Brook Fishing and Boating Access Area, staff concluded that there is no demonstrated project-related need for the project to provide electric power at the Fife Brook Fishing and Boating Access Area.[130] As discussed in the final EA, whitewater boaters can continue to use battery- and generator-powered pumps to inflate their privately owned rafts and tubes.[131] Therefore, staff did not recommend, and this license does not require, that the project to provide electric power for inflating privately owned rafts.

159. Regarding the recommendation to replace the stairs at the Fife Brook Fishing and Boating Access Area, there is no information in the record demonstrating that the existing stairs at the Fife Brook Fishing and Boating Access Area need to be replaced. As discussed in the final EA, staff found that periodic maintenance of the existing stairways would ensure that the stairs continue to provide safe access to the river during the term of any new license for the project.[132] Staff concluded that the cost of constructing a new set of stairs, versus performing routine maintenance of the existing stairs, is not warranted. Instead, staff recommended installation of a handrail at the existing staircase to improve safety and access for recreational users at Fife Brook Fishing and Boating Access Area. Therefore, Article 410 of this license requires installation of the handrail but does not require replacement of the existing stairs.

2. Shunpike Rest Area

160. Interior, Massachusetts DFW, Franklin Regional Government, the town of Charlemont, the Whitewater Interest Group, Trout Unlimited, CRC, and Deerfield River

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[129] *Id.* at 307.

[130] *Id.* at 307-308.

[131] *Id.*

[132] *Id.*

Watershed Association state that Bear Swamp Power should be required to fund the construction and maintenance of a restroom facility and trash receptacle at the Massachusetts Department of Transportation's Shunpike Rest Area. Trout Unlimited specifies that the sanitary facilities should be seasonal, and CRC and the Deerfield River Watershed Association recommend portable restrooms.

161. The Shunpike Rest Area, located on Route 2, approximately 9.2 river miles downstream of the Fife Brook Development, is a non-project recreation site that is owned and maintained by the Massachusetts Department of Transportation. In the final EA,[133] staff concluded that the unsanitary conditions at the Shunpike Rest Area do not appear to be the result of inadequate facilities at the Bear Swamp Project or to be otherwise related to the Bear Swamp Project. As discussed in the final EA, the project provides several recreational facilities that include multiple restroom and trash disposal facilities, which are available for public use in the project boundary, approximately 1.5 miles upstream of the Shunpike Rest Area. Based on the adequacy of the existing and proposed sanitation facilities at the project recreation sites and the fact that the unsanitary conditions are occurring at an area not directly associated with the project, there is no project-related justification for requiring the construction and maintenance of a restroom facility and trash receptacle at the off-site, Shunpike Rest Area.[134] Therefore, this license does not require Bear Swamp Power to fund the construction and maintenance of restroom facilities or trash receptacles at the Shunpike Rest Area.

3. Zoar Whitewater Access Area

162. Bear Swamp Power proposes, and Interior, Massachusetts DFW, and the Whitewater Interest Group recommend, that the trail leading to the river at the Zoar Whitewater Access Area above the Class III Zoar Gap rapid (also known as "Last Chance Eddy") be improved and widened so that rafts can be carried flat from the road to the river.

163. The Zoar Whitewater Access Area provides a primitive, dirt shoreline access trail, unimproved boat launch/take-out, an information kiosk, and parking for approximately 7 to 10 vehicles to access project-related recreation features, including whitewater features approximately 5.3 river miles downstream of the Fife Brook Development in the Deerfield River. In the final EA,[135] staff concluded that widening the access trail to a width of 8 feet would allow for most rafts to be carried and would improve recreation and access at the project. Staff also concluded that the levelized annual cost of $653 was

[133] *Id.* at 308.

[134] *Id.* at 308-309.

[135] *Id.* at 277.

worth the benefit of widening the trail to improve public access for recreationists accessing whitewater features in the Deerfield River. Therefore, Article 410 of this license requires this improvement.

4. Zoar Picnic Area

164. Bear Swamp Power proposes to increase the number of seasonal restroom facilities and provide a stall-type changing facility at the project's Zoar Picnic Area. Bear Swamp Power also proposes, and stakeholders recommend, that a second set of steps be constructed downstream of the existing set of stairs to improve river access at the site. Interior, Massachusetts DFW, and the Whitewater Interest Group recommend that Bear Swamp Power provide seasonal waste receptacles to mitigate dumping along the riverbank and in the woods surrounding the Zoar Picnic Area.

165. In the final EA,[136] staff concluded that three existing seasonal restrooms located at the Zoar Picnic Area are inadequate to accommodate user demand during the peak summer recreation season and holiday weekends. Installing at least two additional seasonal restrooms between the months of April and October, as proposed by Bear Swamp Power, would improve sanitation at the site. Additionally, staff concluded that the installation of a changing facility, with at least four changing stalls, at the Zoar Picnic Area would provide the ability for multiple people to change at once, as well as reduce crowding of the restrooms. Finally, staff concluded that the installation of at least six evenly distributed trash receptacles at the Zoar Picnic Area would improve recreation at the project, and benefit sanitation and aesthetics of the recreation facilities. Staff estimated that the levelized annual cost of the measures would be $10,105, and concluded that the aforementioned benefits of the measures would be worth the cost. Therefore, these measures are required by Article 410 of this license.

166. Trout Unlimited, CRC, and the Deerfield River Watershed Association note that the trees are roughly the same age and species, and recommend that Bear Swamp Power prepare a succession plan for the aging trees so that shade is maintained by gradually replacing the trees instead replacing them all at the same time. Massachusetts DFW recommends that any trees that are removed at the Zoar Picnic Area be replaced with "new native trees found in similar growing condition[s] in the Deerfield watershed as the trees removed." The CRC and Deerfield River Watershed Association recommend that a tree disease specialist evaluate the site and develop a plan to ensure continued overhead vegetation to provide shade at the Zoar Picnic Area and that all the trees in the Picnic Area do not suffer from disease or insect infestation all at once.

[136] *Id.* at 277-278.

167. In the final EA,[137] staff recommended limiting tree cutting at the Zoar Picnic Area to the selective cutting of only hazardous trees to ensure that shade continues to be provided. To the extent that a hazardous tree needs to be removed, staff recommended that the tree be replaced by another tree that, upon maturity, would provide the same shade benefits as the tree that is removed. Staff concluded that replacing hazardous trees with native trees that thrive in similar growing conditions would increase the likelihood of the replacement trees surviving to maturity and providing continued shade. Staff also found that requiring any replacement trees to be of a different native species than the current single coniferous species at the site would increase diversity and help protect against a mass die-off of all the trees due to biological factors. Staff concluded that these measures could be achieved at no additional cost to Bear Swamp Power. Therefore, this license requires that these measures be included in the recreation facilities management plan required by Article 409.

168. As discussed in the final EA,[138] preparation of a succession plan is not needed to ensure an adequate amount of shade is provided at the Zoar Picnic Area. Staff concluded that vegetative shade could be maintained by limiting tree cutting to the selective cutting of hazardous trees, and replacing any hazardous trees that are removed with other native trees that have similar growing conditions, at no extra cost to Bear Swamp Power. Because the levelized annual cost of a succession plan would be $1,230, staff concluded that the benefits would not justify this cost. Therefore, the recommended succession plan is not required by this license.

169. Staff also concluded in the final EA that while a tree disease specialist could provide expertise on tree replacement, it is already apparent that many of the existing trees are all of a single coniferous species and approximately the same age.[139] Staff's recommendation that any replacement trees be of a different native species than the dominant species, which is required by Article 409 of this license, would increase diversity and protect against a mass die-off of all the trees due to biological factors, at no additional cost to Bear Swamp Power. Therefore, the benefits of consultation with a tree disease specialist would not be worth the levelized annual cost of $142, and the recommended evaluation is not required by this license.

5. Fife Brook Impoundment

170. To improve whitewater boating access on the Deerfield River, Bear Swamp Power proposes to design and construct a new boater egress trail at the upper extent of the Fife

[137] *Id.* at 278-279.

[138] *Id.*

[139] *Id.*

Brook impoundment that would begin downstream of the Showtime rapid and extend upstream approximately 2,200 feet to the existing vehicle turnaround at Great River Hydro's Dunbar Brook Picnic Area.

171. The Whitewater Interest Group recommends that Bear Swamp Power consult with recreation stakeholders on the design of this egress trail, and that the egress trail extend down to the water's edge to provide access for those boaters with physical limitations or disabilities. Separately, the Whitewater Interest Group recommends Bear Swamp Power construct a portage trail around the Fife Brook dam and construct a trail between the Visitor Center and the Fife Brook impoundment to provide public access to the impoundment. CRC also recommends providing access to the Fife Brook impoundment.

172. Currently, there are no project recreation facilities that provide access to the Fife Brook impoundment, and no direct public access to the Fife Brook impoundment due to hazards associated with the large daily fluctuations and strong currents within the impoundment, which increase the risk of injury or mortality. Boaters that use the non-project Dunbar Brook Picnic Area or Monroe Bridge put-in locations to access the bypassed reach of Deerfield Station No. 5, which is upstream of the Fife Brook impoundment, can boat downstream, through three Class IV rapids, to the Fife Brook impoundment. Boaters using this stretch must exit from the Deerfield River and carry boats approximately 1,000 feet along rocky shoreline terrain to access the upstream take-out. In the final EA,[140] staff concluded that constructing and maintaining a boater take-out site downstream of the rapids, along with the new egress trail proposed by Bear Swamp Power, would allow boaters to exit the river safely after completing the whitewater run through the rapids, and would provide an easier egress for all users of varying physical ability, and thereby improve the recreational experience. Consulting with recreation and whitewater boating stakeholders on the siting of the take-out and egress trail would allow experienced whitewater boaters with local knowledge to provide input on the optimal placement of these facilities for recreationists. Additionally, Commission staff concluded that installing signs along the river to guide boaters to the take-out would improve the upstream whitewater boating experience by improving egress.[141] Staff estimated that the levelized annual cost of the measures would be $5,919 and concluded that the aforementioned benefits for whitewater boating recreationists would be worth the cost.[142] For the above reasons, these measures are required by Article 410 of this license.

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[140] *Id.* at 275-276.

[141] *Id.* at 275.

[142] *Id.* at 275-276.

173. Regarding the Whitewater Interest Group's recommendations to construct trails and CRC's recommendation to provide access to the impoundment, staff concluded that the presence of several safety hazards in the lower extent of the impoundment, including daily fluctuations of up to 40 feet and strong currents associated with the Bear Swamp PSD, limits Bear Swamp Power's ability to provide safe access for public recreation.[143] As discussed in the final EA, safety and directional signage are installed in the upper extent of the Fife Brook impoundment to warn of the dam ahead and guide boaters out of the river and away from the lower extent of the Fife Brook impoundment downstream of the Deerfield Station No. 5 powerhouse. Because these safety concerns would negate the recreational benefits of providing access to the lower impoundment,[144] this license does not require installation of a portage around the Fife Brook dam, the opening of the Fife Brook impoundment to recreation, nor the construction of an access trail to the lower extent of the Fife Brook impoundment.

6. Fife Brook Impoundment Elevation for Whitewater Features

174. The upstream, separately licensed Deerfield Station No. 5 is required to provide 32 scheduled whitewater flow releases of between 900 cfs and 1,100 cfs between May 1 and October 21 annually, for a duration of 4 to 5 hours (from as early as 10 a.m. to 3 p.m.).[145] The releases provide whitewater boating opportunities in the river reach upstream of the Fife Brook impoundment. Within the upper reaches of the Fife Brook impoundment, there is a series of highly technical whitewater rapids known as "the Dryway."

175. As discussed in the final EA,[146] the Dryway is a popular destination for advanced boaters because of numerous Class III and Class IV rapids over its 2.65-mile length. Within the project boundary, three Class IV rapids (Dragon's Tooth, Labyrinth, and Showtime) are located in the Dryway, at elevations of 845 feet, 840 feet, and 834 feet NGVD29, respectively. When the Fife Brook impoundment is below 834 feet NGVD29, the Class IV rapids are fully exposed and available for whitewater boating. When the elevation of the Fife Brook impoundment increases, a backwater effect occurs that inundates the rapids. To provide additional whitewater opportunities resulting from the 32 scheduled releases from the upstream Deer Station No. 5, the Whitewater Interest Group recommends that Bear Swamp Power maintain the Fife Brook impoundment no

[143] *Id.* at 187-189, 221, and 306-307.

[144] *Id.* at 306-307.

[145] *Id.* at 208.

[146] *Id.* at 181.

higher than 835 feet NGVD during the entirety of the releases (i.e., 10 a.m. to as late as 3 p.m.) so that the Dryway rapids are fully exposed for whitewater boating.

176. In the final EA,[147] staff found that the Whitewater Interest Group's recommendation would provide additional whitewater boating opportunities at the project by reducing inundation of the rapids during the whitewater releases. The cost of holding the elevation of the Fife Brook impoundment at or below 835 feet during the entirety of the releases would be reduced hydropower production at the Bear Swamp PSD. As discussed in the final EA, the highest period of peak electricity demand in the New England region has historically occurred as early as 2 p.m., and the Bear Swamp PSD could be needed for generation and ancillary services in the hours preceding or following the 2 p.m. hour. Therefore, the Whitewater Interest Group's recommendation could render the Bear Swamp PSD unavailable for providing capacity, generation, and ancillary services during periods of peak energy demand.[148] In the alternative, Commission staff found that holding the impoundment at an elevation at or below 835 feet from 10 a.m. to 12 p.m., rather than the full period recommended by Whitewater Interest Group, would benefit whitewater recreation in the Dryway while at the same time preserving the ability of Bear Swamp PSD to meet regional power requirements and capacity needs during peak energy demand periods, and recommended it.[149] Article 403 requires the licensee to maintain the Fife Brook impoundment between the elevations of 830 and 835 feet NGVD29 during the hours of 10 a.m. to 12 p.m. on the 32 days of the year when the licensee for the Deerfield Project No. 2323 is scheduled to release whitewater flows from the dam of the upstream Deerfield Station No. 5 development.

7. Additional Recreation Access Areas

177. In its recreation facilities management plan, Bear Swamp Power proposes to maintain all project recreation sites except Carbis Bend and Bridge to Nowhere, which are undeveloped recreation sites on the Deerfield River downstream of the dam.

178. In the final EA,[150] staff recommended modifying Bear Swamp Power's proposed recreation facilities management plan to add measures for maintaining Carbis Bend and Bridge to Nowhere, as undeveloped project recreation sites to ensure that river access is

[147] *Id.* at 286-288.

[148] *Id.* at 371-372.

[149] *Id.* at 287-288.

[150] *Id.* at 280.

provided for anglers downstream of the dam.[151] As staff explained in the final EA, maintaining the Carbis Bend and Bridge to Nowhere sites as undeveloped project recreation sites would not involve any new construction or development, and there would be minimal cost to maintaining the sites. The sites would be minimally maintained by Bear Swamp Power to provide safe access for recreation users by installing safety signs for recreation users, trimming vegetation along the paths to the river, and removing trash. Therefore, staff recommended including provisions to maintain Carbis Bend and Bridge to Nowhere as undeveloped project recreation sites in the recreation facilities management plan. Article 409 of this license requires these provisions.

R. Availability of Recreation Information

179. Bear Swamp Power provides information on scheduled and current flows in the Deerfield River downstream of the Fife Brook dam for the purpose of informing the public of the daily operation at Fife Brook Development. A whitewater release schedule is posted publicly on or before April 1 of the current year at the Bear Swamp Project and is available online at Bear Swamp Power's Safe Waters website.[152] Bear Swamp Power's Safe Waters website also provides a 24-hour schedule of the timing and size of flows from the Fife Brook Development to the Deerfield River. The information provided by the Safe Waters website includes the start and end times for various flows that will be released over the 24-hour period, and the current outflow from the Fife Brook dam, updated every 5 minutes. Information on current flows is also available through Bear Swamp Power's Safe Waters' toll-free phone line, but stakeholders expressed interest in providing the public with additional methods to verify Fife Brook Development flow releases.

1. Public Website

180. The CRC and Deerfield River Watershed Association recommend that Bear Swamp Power maintain a public website providing information about the project's recreational opportunities and site locations, and that the website be easy to find through a simple online search. The CRC and the Deerfield River Watershed Association also recommend that Bear Swamp Power work with other licensees on the Deerfield River (Great River Hydro and Hull Street Energy) to create a single comprehensive website specific to the Deerfield River. The CRC and Trout Unlimited state that the existing Safe Waters website does not provide information necessary for recreation users to know

[151] *Id.* at 279.

[152] Safe Waters website available at: https://www.safewaters.com/facility/fife-brook.

when flows from the Fife Brook impoundment will reach downstream locations for fishing and boating.

181. The final EA evaluated the benefits and costs of Bear Swamp Power's current protocols for informing the public of flow releases from the Fife Brook Development. Generally, staff found that Bear Swamp Power's website and toll-free phone line provides information on whitewater schedules, 24-hour flow release schedules, and current flows from the Fife Brook Development to alert the public of real-time and future project operation.[153] To ensure that flow information is available to the public, staff found that a recreation facilities management plan should include a provision for a toll-free phone number that provides information on current flow releases from the Fife Brook Development, and a website that provides: (a) the annual schedule for whitewater flow release days; (b) a 24-hour schedule for the timing and size of flows from the Fife Brook Development posted by 5 p.m. on the prior day; (c) current outflow from the Fife Brook Development; and (d) updates to schedules and the current flows information on a 5-minute basis.[154] Staff concluded that a recreation facilities management plan with these provisions would be worth the approximate levelized annual cost of $9,001.[155] Therefore, Article 409 of this license requires the plan and these provisions.

182. CRC and the Deerfield River Watershed Association's recommendation that Bear Swamp Power develop a single website with other licensees on the Deerfield River would produce a single source of information for recreation across the entire watershed and would make finding information on recreation in the region more convenient for the public. Any new license for the Bear Swamp Project would apply to the Bear Swamp Project only and cannot be used to impose conditions on other separately licensed projects. Therefore, developing a single website for all projects on the Deerfield River is not required as part of this license.

183. In the final EA,[156] staff concluded that a public website that provides a map and describes project recreation facilities and whitewater flow release information would improve recreational opportunities at the project by providing easily accessible information about the project's recreational opportunities to the public. Staff also concluded that continuing to provide flow information via the Safe Waters website, or another public website, would ensure that recreational users can find information about Bear Swamp Power's flow releases from the Fife Brook dam. Further, continuing to post

[153] Final EA at 284-285.

[154] *Id.* at 214.

[155] *Id.* at 275.

[156] *Id.* at 284.

the 24-hour schedule for the next day by 5 p.m. on the prior day, and updating the 24-hour schedule and the current outflow information on a 5-minute basis throughout the day to reflect actual flow conditions, would allow recreation users to more accurately plan recreational outings. Additionally, posting a map on the Safe Waters website, or another public website, that displays the amount of time it takes for flows to reach each project recreation site would ensure that recreation users have the information necessary to estimate the approximate time when flows from the Fife Brook impoundment would be expected to reach downstream locations for fishing and boating. In the Final EA,[157] staff estimated that there would be no additional cost for the aforementioned benefits and recommended the measures. For these reasons, Article 409 requires that Bear Swamp Power's recreation facilities management plan include provisions for maintaining a public website that provides this information.

2. Flow Gage

184. CRC and Trout Unlimited recommend installing a flow gage immediately downstream of Fife Brook dam to monitor flow releases to ensure compliance with minimum flows and whitewater flow releases. CRC and Trout Unlimited also state that information from the gage should be made available to the public on a real-time basis.

185. The final EA evaluated the benefits and costs of the stakeholders' request to install a flow gage downstream of Fife Brook dam. Staff concluded that Bear Swamp Power's website and toll-free number provide the public with sufficient real-time information on flow releases from the Fife Brook Development.[158] In addition, the USGS gage at Charlemont, 12 miles downstream of the project, also provides instantaneous flow information about the Deerfield River. Staff concluded that Bear Swamp Power's toll-free phone number and website provide sufficient information to the public in real-time and a flow gage downstream of Fife Brook dam would not be worth the levelized annual cost of $900.[159] Therefore, this license does not require any further license measures to provide information to the public in real-time.

S. Recreational Safety and Warning Systems

1. Warning System

186. Bear Swamp Power does not propose any specific revisions to its existing Public Safety Plan, but proposes to work with the Commission to ensure that the project's Public

[157] *Id*. at 213-215.

[158] *Id.*

[159] *Id.* at 312.

Safety Plan sufficiently addresses any safety issues related to the audibility of the downstream warning system downstream of the Fife Brook Development.

187. The Franklin Regional Government recommends an improved warning system to effectively provide notice and time for recreation users and downstream anglers in the Deerfield River, downstream of the Fife Brook Development, to avoid the danger of increasing flow releases from the Fife Brook dam. Trout Unlimited recommends installing a flow release warning system using light installations at formal and informal recreational areas.

188. In the final EA,[160] staff found that Bear Swamp Power's existing siren-based downstream warning system does not adequately warn recreation users when higher flows are being released from Fife Brook dam to the Deerfield River. The siren is only audible under ideal conditions (e.g., cooler temperatures, low humidity, lack of foliage, and absent ambient and environmental noise like passing trains or automobile traffic) at the Fife Brook Fishing and Boating Access Area, which is 0.4 mile downstream of the dam, and is not audible at any of the other downstream recreation sites. Given the abundance of noise sources and the acoustics within the Deerfield River Valley (e.g., traffic, trains, wildlife, recreation users), staff concluded that installing warning systems that employ both auditory and visible signals, such as horns and flashing red lights, at project recreation sites downstream of Fife Brook dam would improve project safety over the existing lone siren at the Fife Brook dam. Because the installation of such warning systems would improve project safety over the existing siren at the Fife Brook dam, staff concluded that it is worth the estimated levelized annual cost of $1,948. Therefore, Article 304 requires the installation and maintenance of flow release warning systems at the Fife Brook Fishing and Boating Access Area, the Zoar Whitewater Access Area, the Zoar Picnic Area, Carbis Bend, and Bridge to Nowhere project recreation sites.

2. Communication with Emergency Services

189. Bear Swamp Power is not proposing improvements to cellular phone or Wi-Fi infrastructure at the project, but currently provides recreation users at the Fife Brook Fishing and Boating Access Area with a dedicated Wi-Fi connection to the Safe Waters website, which provides information regarding real-time flow schedules. CRC recommends that Bear Swamp Power install Wi-Fi or cellular phone service that covers the entire project area because currently there is no cellular phone signal for emergency calls or access to the river flow information at the project. Interior, the Whitewater Interest Group, and Massachusetts DFW recommend that Bear Swamp Power provide free Wi-Fi access at the Fife Brook Fishing and Boating Access Area to improve public safety by providing communications to and from emergency responders.

[160] *Id.* at 210-211.

190. In the final EA,[161] staff concluded that there is currently no means of contacting emergency services at many, if not all, of the project recreation sites because of the rural nature of the project and the mountainous topography that blocks what cellular phone service is available. River use, especially whitewater rafting, has inherent danger. An emergency phone line or dedicated Wi-Fi service with a limited range would allow for communications during emergencies at the project, which would improve the timeliness of emergency services for recreation users at the project. Therefore, staff concluded that installation of either an emergency phone or dedicated Wi-Fi access for emergency communications with a limited range at each of the project recreation sites along the Deerfield River downstream of Fife Brook dam would be worth the estimated annual levelized cost of $1,911. Article 304 of this license requires installation of an emergency phone line or dedicated Wi-Fi access for emergency communications at each of the project sites along the Deerfield River downstream of Fife Brook dam.

3. Signage

191. Bear Swamp Power proposes to install signage downstream from the Fife Brook dam that provides information on the flow regime and river safety. The Whitewater Interest Group requests that Bear Swamp Power install signage to educate recreationists on safety and the Deerfield River flow regime.

192. Currently, there are eight signs downstream of Fife Brook dam that warn the public of rising waters. The signs do not provide information on the flow regime, the warning system at the project, or other information on river safety. In the final EA,[162] staff concluded that the installation of additional signs at the project recreation sites downstream of Fife Brook dam would increase public safety and ensure that river users are informed of potential dangers, safety measures, and river conditions that they could expect to encounter at the project. Information describing flow releases from Fife Brook dam and the safety warning system (as required by Article 304 of this license), including the 15-minute pause at 3 MW, would increase public safety at the project. Staff concluded that the installation of additional signs at the three project recreation sites would improve public safety and would be worth the estimated levelized annual cost of $691 and recommended installing them at the project. Article 304 of this license requires installation of the additional signs at the three project recreation sites along the Deerfield River, downstream of the Fife Brook dam.

[161] *Id.* at 283.

[162] *Id.*

T. Whitewater Flow Releases

193. The prior license required Bear Swamp Power to provide 106 annual scheduled whitewater flows of 700 cfs from the Fife Brook dam for a minimum duration of three hours, beginning between 9:30 a.m. and 12:00 p.m. Although the prior license required a release of 700 cfs, since 1994, Bear Swamp Power has been releasing 800 cfs.[163] Bear Swamp Power releases the scheduled whitewater flows according to the following schedule: (1) three weeks of Wednesday through Sunday releases in April; (2) two weeks of Wednesday through Sunday releases, plus two weeks of Saturday and Sunday releases in May; (3) two weeks of Wednesday through Sunday, plus two weeks of Saturday and Sunday releases in June; (4) three weeks of Wednesday through Sunday releases, plus one week of Saturday and Sunday releases in July; (5) four weeks of Wednesday through Sunday releases in August; (6) three weeks of Wednesday through Sunday releases in September; and (7) three weeks of Wednesday through Sunday releases in October.

194. In this relicensing proceeding, stakeholders expressed interest in potentially enhancing the current whitewater recreational opportunities at the project while, at the same time, considering how modified whitewater releases, and the timing thereof, would affect project generation and aquatic resources, including state-listed dragonflies. The final EA evaluated the current whitewater flow releases, Bear Swamp Power's whitewater flow release proposal, three recommended alternatives identified by relicensing stakeholders, and an alternative identified by staff.

195. Bear Swamp Power proposes to continue to provide 106 annual scheduled whitewater flow releases for a duration of at least three hours according to the current schedule. Bear Swamp Power also proposes to continue releasing 800 cfs instead of the 700-cfs requirement under the prior license. In addition, Bear Swamp Power proposes to release 74 of the 106 scheduled whitewater flows starting at 11 a.m. and release the remaining 32 scheduled whitewater flows between 11 a.m. and 12 p.m. In addition to its 106 annual whitewater flow releases, Bear Swamp Power also regularly releases unscheduled flows greater than 700 cfs from the Fife Brook dam into the Deerfield River, which provides additional unscheduled whitewater recreation opportunities.[164] In total,

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[163] *See* March 30, 2018 final license application at E-67.

[164] For example, from May 1 through October 31, 2016, Bear Swamp Power provided flows of 700 cfs or greater for a duration of at least 2 hours on 37 days when whitewater flows were not already scheduled. Additionally, From May 1 through October 31, 2016, Bear Swamp Power provided flows of 800 cfs or greater for a duration of at least two hours on 17 days when whitewater flows were not already scheduled. *See* Final EA at 201.

these scheduled and unscheduled flows provide an average of 145 days of whitewater flow release volumes annually, from April 1 through October 31.

196. The Whitewater Interest Group contends that Bear Swamp Power's proposal does not go far enough in enhancing whitewater opportunities at the project. As an alternative, the Whitewater Interest Group recommends adding 14 additional whitewater flow release days during the peak boating season from May through September. Alternatively, the Whitewater Interest Group recommends reallocating whitewater flow release days from April and October to between June 16 and Labor Day of the same year as follows: (1) the last three Wednesdays, Thursdays, Fridays, Saturdays, and Sundays in April; (2) the last two Wednesdays, Thursdays, Fridays, Saturdays, and Sundays in May, and, prior to these, all Fridays, Saturdays, and Sundays except West River Week; (3) no releases during the first weekend of June for Massachusetts Free Fishing Weekend, then providing the releases on Saturday and Sunday during the second week of June, then providing the releases on all Wednesdays, Thursdays, Fridays, Saturdays, and Sundays after June 15; (4) in July, the last two Mondays, all Wednesdays, Thursdays, Fridays, Saturdays, and Sundays, and July 4 if it does not fall on a scheduled release date; (5) in August, provide releases on the first two Mondays and all Wednesdays, Thursdays, Fridays, Saturdays, and Sundays; (6) in September, Labor Day Monday and all Wednesdays, Thursdays, Fridays, Saturdays, and Sundays except for West River Week; and (6) the first three Wednesdays, Thursdays, Fridays, Saturdays, and Sundays of October.

197. In addition, the Whitewater Interest Group and commercial whitewater outfitters recommend providing at least 900 cfs on weekends, holidays, and special events to improve whitewater boating conditions on the Deerfield River below the Fife Brook dam. The Whitewater Interest Group also recommends that Bear Swamp Power provide outflow volumes that match the exact inflow volumes provided from the upstream Deerfield Station No. 5 on 32 days of the year, when flow releases from Deerfield Station No. 5 range from 900 cfs to 1,100 cfs for 4 to 5 hours. Lastly, the Whitewater Interest Group recommends that Bear Swamp Power begin hydropower generation prior to 2 p.m. on unscheduled whitewater release days to provide additional whitewater boating opportunities in the morning during summer months.

198. Citing concerns that Bear Swamp Power's whitewater flow proposal and the Whitewater Interest Group's alternative would adversely affect state-listed dragonflies, Massachusetts DFW recommends, pursuant to sections 10(a) and 10(j), alternative project operations to protect dragonflies and other aquatic resources during whitewater flow releases. These recommendations include releasing 700 cfs as required by the prior license, providing scheduled whitewater flows releases at 10 a.m., and restricting outflow to 125 cfs until 1 p.m. or later when there are no scheduled whitewater flow releases (i.e., unscheduled days) during the dragonfly emergence periods of mid-May through mid-June and early July through the end of August.

199. Regarding scheduled whitewater flows, Massachusetts DFW recommends the following for whitewater flow releases in May: (1) provide the scheduled whitewater flow releases required by the Deerfield River Agreement, such that Wednesday through Sunday releases are scheduled during the first half of the month; (2) restrict weeks with Wednesday through Sunday releases to weeks where Wednesday has a calendar day prior to May 15; and (3) "observed Memorial Day (last Monday in May) may be substituted for a Saturday or Sunday recreational release between the dates of May 18 through May 31, inclusive." For scheduled whitewater flow releases in June, Massachusetts DFW recommends that Bear Swamp Power: (1) provide the scheduled whitewater flow releases required by the Deerfield River Agreement such that Wednesday through Sunday releases are scheduled during the latter half of the month, and (2) restrict weeks with Wednesday through Sunday releases to weeks where Wednesday has a calendar day after June 14.

200. Trout Unlimited expressed similar concerns as Massachusetts DFW in regard to Bear Swamp Power's proposed whitewater flow release volume and recommends that Bear Swamp Power release 700 cfs, as required by the prior license.

201. In the final EA,[165] staff evaluated the benefits and costs of the proposed whitewater flow schedule and volume, recommended alternatives, and identified a fifth, staff-recommended alternative. Under the staff alternative, the whitewater flow and release parameters would be as follows: (1) provide 106 annual scheduled whitewater flow releases of at least 800 cfs for a minimum of three hours, (2) release 74 of the 106 scheduled whitewater flows starting at 11 a.m., and (3) release the remaining 32 scheduled whitewater flows between 11 a.m. and 12 p.m. The staff alternative includes the following schedule for the 106 scheduled whitewater flow releases: (1) three weeks of Wednesday through Sunday releases in April; (2) two weeks of Wednesday through Sunday releases, plus two weeks of Saturday and Sunday releases in May; (3) two weeks of Wednesday through Sunday, plus two weeks of Saturday and Sunday releases in June; (4) three weeks of Wednesday through Sunday releases, plus one week of Saturday and Sunday releases in July; (5) four weeks of Wednesday through Sunday releases in August; (6) three weeks of Wednesday through Sunday releases in September; and (7) three weeks of Wednesday through Sunday releases in October.

202. The final EA then evaluated the benefits and costs, including effects on aquatic resources, of the whitewater flow proposal and alternatives. The Whitewater Interest Group's alternative would increase whitewater flow opportunities relative to current conditions, but at the same time, would cause varying degrees of adverse effects on state-

[165] Final EA at 291-296 and 308-312.

listed dragonflies, fish, and macroinvertebrates; boater safety; and project generation.[166] Massachusetts DFW's alternative would protect state-listed dragonflies on days with unscheduled whitewater flow releases but would be less protective than Bear Swamp Power's proposal on scheduled release days.[167] In addition, Massachusetts DFW's alternative could reduce whitewater boating opportunities, cause economic losses for whitewater outfitters, and adversely affect the project's ability to meet the New England region's power requirements and capacity needs during peak load days.[168] Trout Unlimited's recommended 700-cfs whitewater flow release could result in fewer adverse effects to fish and macroinvertebrates than Bear Swamp Power's proposed 800-cfs whitewater flow release but would adversely affect whitewater boating opportunities and safety.[169] In considering the benefits and costs of the whitewater flow proposal and flow alternatives, staff concluded that the most appropriate balance of whitewater flow enhancement and effects on project generation and aquatic resources would be struck by the whitewater flow and release schedule specified by the staff alternative.

203. Subsequent to the final EA, Massachusetts DEP issued a water quality certificate with environmental conditions for the project that effectively create a sixth alternative. Massachusetts DEP's certification condition 5A requires Bear Swamp Power to provide 106 annual whitewater flow releases of 800 cfs from the Fife Brook dam from April 1 through October 31 for a minimum duration of 3 hours. The 106 scheduled whitewater flow releases include 74 days of releases from Fife Brook dam and 32 days of releases from Deerfield Station No. 5. Condition 5B requires Bear Swamp Power to provide stable or diminishing flows from the Fife Brook Development from 7:00 a.m. to 11:30 a.m. on scheduled release days from May 15 through June 15 and July 8 through August 31. Condition 5C requires Bear Swamp Power to provide stable or diminishing flows from the Fife Brook Development from 7:00 a.m. through a start time of generation flows that averages 11:30 a.m. or later on unscheduled whitewater release days from May 15 through June 15 and July 8 through August 31, the averaging of which must be calculated in groups of no more than two days. Condition 5C also states that generation flows may not start earlier than 10:00 a.m. on any days between May 15 through June 15, and not earlier than 9:00 a.m. on any days between July 8 through August 31. In addition, condition 5C states that releases earlier than 11:30 a.m. may occur on no more than 5 days between May 15 through June 15, and no more than 10 days between July 8

[166] *Id.* at 308-312.

[167] *Id.* at 293 and 295.

[168] *Id.* at 293-296.

[169] *Id.* at 312.

and August 31. Lastly, condition 5C states that Bear Swamp Power may begin generator ramping up to 3 MW no more than 15 minutes prior to the start time of any release.

204. Massachusetts DEP's conditions 5A and 5B are consistent with the staff alternative and have the same effects on aquatic resources, whitewater boating, and generation. Condition 5C, unlike the staff alternative, would adversely affect dragonflies, including state-listed dragonflies. More specifically, condition 5C allows unscheduled whitewater releases to begin as early as 9:45 a.m. from May 15 through June 15 and 8:45 a.m. from July 8 through August 31,[170] which would reduce the survival of emerging and eclosing dragonflies because releasing generation flows earlier would wash away more emerging dragonflies before they complete eclosure and fly away compared to releasing flows at 11:30 a.m.[171] However, the conditions that result in the implementation of condition 5C would likely be rare because they would occur for a maximum of 5 days from May 15 through June 15, and 10 days from July 8 through August 31, which represent approximately 16% and 19%, respectively, of the days in each period. Further, Bear Swamp Power is only allowed to release unscheduled whitewater flows early when inflow exceeds the capacity of the Fife Brook impoundment, which likely would be a rare occurrence. Therefore, the adverse effects of the allowed early releases on state-listed dragonflies would be limited during any given year.

205. In considering the benefits and costs of the whitewater flow proposal, recommended alternatives, and water quality certification requirements, the staff alternative continues to strike the most appropriate balance. But, as noted above, the water quality certification conditions are mandatory and required by the license.

U. Operation Compliance Monitoring

206. Under current operation, Bear Swamp Power releases 125 cfs downstream of the Fife Brook Development through two existing minimum flow pipes designed to release 125 cfs and uses a turbine discharge rating curve for the Fife Brook Development turbine to release whitewater flows. Bear Swamp Power proposes to develop an operation compliance monitoring plan that describes: (1) mechanisms and structures that would be used to provide minimum flow releases and scheduled whitewater flow releases;

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[170] If Bear Swamp Power begins ramping 15 minutes prior to a 10:00 a.m. whitewater release time, water levels immediately downstream of the Fife Brook dam could begin rising at 9:45 a.m.

[171] The peak emergence period for dragonflies occurs at noon, and most dragonflies can complete the eclosure process in 1 to 2 hours. Flows released before 11:30 a.m. would reach the parts of the river where emerging dragonflies are most prevalent before they could complete eclosure and fly away. Final EA at 138-143.

(2) periodic maintenance and calibrations necessary for installed measuring devices; and (3) procedures for recording and reporting data to the Commission and resource agencies.

207. Stakeholders also expressed interest in ensuring compliance with the environmental requirements of any license issued by the Commission. Interior recommends, under section 10(j), that Bear Swamp Power prepare and file a plan for monitoring flow releases from Fife Brook dam within 6 months of license issuance. Interior's recommended plan would include details of the mechanisms and structures used to provide flow releases, maintenance and calibration procedures, a description of manual and automatic operation, an implementation schedule, and recording and reporting of data to the Commission and the resource agencies. Massachusetts DFW recommends, under section 10(j), that Bear Swamp Power prepare a plan for monitoring run-of-release operation at the Fife Brook Development, including procedures for calibrating and maintaining monitoring equipment and reporting to resource agencies and other interested non-governmental agencies. These recommendations would result in the development of a plan to ensure compliance with license environmental requirements.

208. The final EA evaluated the current protocols for flow releases, Bear Swamp Power's relicensing proposal, two alternatives identified by relicensing stakeholders, and an alternative recommended by Commission staff. Under the staff alternative, an operation compliance monitoring plan would incorporate Bear Swamp Power's proposal, Interior's recommended provisions, and Massachusetts DFW's recommended provisions. Staff found that development of its recommended operation compliance monitoring plan would help Bear Swamp Power document its compliance with the operational provisions of any new license, provide a mechanism for reporting operational data and deviations, and facilitate administration of the license.[172] Staff estimated that the levelized annual cost of such a plan would be $4,069 and concluded that the benefits would be worth the cost.

209. After staff issued the final EA, Massachusetts DEP issued a water quality certification with environmental conditions for the project that included provisions related to operation compliance. Certification condition 4A(1) requires Bear Swamp Power to develop a seasonal minimum flow release plan that includes modifications to the project to allow for releasing and monitoring a minimum flow of 225 cfs from the Fife Brook Development from November 1 through April 15. Certification condition 4A(3) requires Bear Swamp Power to revise the staff-recommended operation compliance monitoring plan to describe how the Bear Swamp Project would be operated and monitored to comply with the required 225-cfs minimum flow releases (condition 4), water level limits and storage requirements for the Fife Brook impoundment, and the

[172] Final EA at 72, 89, 94, 97, 102, 106, and 118.

mode of operation for the Bear Swamp PSD and the Fife Brook Development (condition 2).

210. Massachusetts DEP's specified operation compliance monitoring plan does not account for the additional requirements of this license, including Article 403 (discussed above), which requires water level limits for the Bear Swamp PSD, ramping of generation and whitewater flows, and water level limits for the Fife Brook Development during scheduled whitewater flow releases from the dam of Deerfield Station No. 5. As discussed in the Final EA, staff recommended Bear Swamp Power's proposed water level limits for Bear Swamp PSD.[173] Staff also recommended ramping of generation flows and water level limits for the Fife Brook Development because these measures provide benefits to fish and aquatic resources (including trout fry and state-listed dragonflies), whitewater boating, and downstream recreation users, while balancing the need for the project to generate power to meet peak electricity demand.[174] Including these provisions in the operation compliance monitoring plan would ensure that Bear Swamp Power operates the project according to the requirements of this license.

211. Article 404 of this license requires Bear Swamp Power to develop an operation compliance monitoring plan consistent with the operation requirements of Article 403 and Massachusetts DEP's certification conditions 4A(1) and 4A(3), and includes the following additional provisions: (1) a description of the gages and other measuring devices or techniques that will be used to monitor compliance with license requirements, including the locations of all gages and measuring devices; (2) a provision to maintain a daily log of project operation; (3) standard operating procedures to be implemented outside of normal operating conditions, including during: (a) scheduled facility shutdowns and maintenance; and (b) emergency conditions, including those that require unscheduled facility shutdowns and maintenance; and (4) a schedule for installing any monitoring equipment needed to document compliance with the operational requirements of the license.

Project Boundary

212. Project boundaries enclose the project works that are to be licensed and should include "only those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources."[175]

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[173] *Id.* at 113-114.

[174] *Id.* at 72, 89, 94, 97, 106, and 118.

[175] 18 C.F.R. § 4.41(h)(2).

213. The project boundary under the prior license enclosed approximately 1,474 acres of land and water, including: (1) the upper and lower reservoirs (approximately 270 acres); (2) land associated with project structures (approximately 130 acres); and (3) land around the reservoirs and downstream of Fife Brook dam that is used for recreation and environmental protection (1,074 acres).

214. Under the new license, Bear Swamp Power proposes a project boundary that includes 1,305.3 acres of land and water, which is approximately 168.7 acres less than under the prior license. Bear Swamp Power proposes that the following land that was included in the project boundary under the prior license not be included in the project boundary under a new license because the land is not needed for project purposes: (1) 109.74 acres of land northeast of the upper reservoir; (2) 20.04 acres of land west of the Fife Brook dam; (3) 31.99 acres of land associated with River Road and land north of Fife Brook impoundment; and (4) 5.9 acres of land associated with the non-project River Road downstream of the Fife Brook dam. The 161.77 acres of land stipulated in items 1 through 3 above were part of a conservation easement required by Article 405 of the prior license for the protection of sensitive forest species; however, that conservation easement expired on April 1, 2020, coincident with the expiration date of the prior license.[176] Bear Swamp Power additionally proposes to not include approximately 1 acre of land due to minor adjustments to the project boundary line.

215. In the final EA,[177] staff concluded that the 168.7 acres of land that was included in the project boundary under the prior license would not serve a project purpose under a new license because the land is located on the border of the existing conservation easement, and no sensitive species were identified as occurring within this area. Staff also concluded that the remaining 1,044.23 acres of unfragmented, forested land would continue to protect sensitive species and should be included in the project boundary as proposed by Bear Swamp Power. In addition, staff concluded that River Road, located downstream of Fife Brook dam, is not a project feature and does not contribute to the protection of the unfragmented forest area that would be included within the project boundary for the protection of resources affected by the project under a new license. Therefore, Ordering Paragraph (C) approves Bear Swamp Power's proposed project boundary as depicted in Bear Swamp's Exhibit G drawings.

[176] *Supra* PP 147, 151.

[177] Final EA at 218-219.

Administrative Provisions

A. Annual Charges

216. The Commission collects annual charges from licensees for administration of the FPA.[178] Article 201 provides for the collection of these funds for administration of the FPA.

B. Reservation of Authority to Require Financial Assurance Measures

217. To confirm the importance of licensees maintaining sufficient financial reserves, Article 202 reserves the Commission's authority to require future measures to ensure that the licensee maintains sufficient financial reserves to carry out the terms of the license and Commission orders pertaining thereto.

C. Exhibit F and G Drawings

218. The Commission requires licensees to file sets of approved project drawings in electronic file format. Article 203 requires the filing of these drawings.

D. Amortization Reserve

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

E. Headwater Benefits

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

F. Project Financing

221. To ensure that there are sufficient funds available for project construction, operation, and maintenance (including for the construction of new recreational facilities), Article 206 requires the licensee to file for Commission approval documentation of project financing for the construction, operation, and maintenance of the project at least 90 days before starting any construction associated with the project.

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[178] 16 U.S.C. § 803(e)(1); *see also* 18 C.F.R. § 11.1.

G. As-Built Exhibits

222. Where new construction or modifications to the project are involved (e.g., new recreation facilities and facility upgrades), the Commission requires licensees to file revised exhibits of project features as-built. Article 207 provides for the filing of these exhibits.

H. Review of Final Plans and Specifications

223. Article 301 requires the licensee to consult with the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer on any proposed modifications resulting from environmental requirements.

224. Article 302 requires the licensee to provide the Commission's D2SI – New York Regional Engineer with final design documents prior to construction, including plans and specifications, a supporting design report, a quality control and inspection program, a temporary construction emergency action plan, and a soil erosion and sediment control plan.

225. Article 303 requires the licensee to provide the Commission's D2SI – New York Regional Engineer with cofferdam and deep excavation construction drawings prior to the start of any construction requiring cofferdams or deep excavations.

226. Article 304 requires the licensee to provide a Public Safety Plan, including one copy to the Commission's D2SI – New York Regional Engineer and two copies to the Commission, that includes an evaluation of public safety concerns at the project site, in accordance with the Commission's Guidelines for Public Safety at Hydropower Projects.[179]

I. Commission Approval of Resource Plans, Notification, and Filing of Amendments

227. In Appendix A of this order, there are certain certification conditions that either do not require the licensee to file plans with the Commission, or that contemplate future changes to project facilities or operations without the opportunity for prior Commission review. Therefore, Article 401 requires the licensee to file the plans with the Commission for approval and file amendment applications prior to making changes to project facilities or operations, as appropriate.

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[179] *See* FERC's Division of Dam Safety and Inspections, Guidelines for Public Safety at Hydropower Projects (1992), https://www.ferc.gov/sites/default/files/2020-04/public-safety_0.pdf.

J. Use and Occupancy of Project Lands and Waters

228. Requiring a licensee to obtain prior Commission approval for every use or occupancy of project land would be unduly burdensome. Therefore, Article 412 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

State and Federal Comprehensive Plans

229. Section 10(a)(2)(A) of the FPA,[180] requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.[181] Under section 10(a)(2)(A), Commission staff identified and reviewed 12 comprehensive plans relevant to this project.[182] No conflicts were found.

Applicant's Plans and Capabilities

230. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,[183] Commission staff evaluated Bear Swamp Power's record as a licensee with respect to the following: (A) conservation efforts; (B) compliance history and ability to comply with the new license; (C) safe management, operation, and maintenance of the project; (D) ability to provide efficient and reliable electric service; (E) need for power; (F) transmission services; (G) cost effectiveness of plans; and (H) actions affecting the public.

A. Conservation Efforts

231. Section 10(a)(2)(C) of the FPA requires the Commission to consider the electricity consumption improvement program of the applicant, including its plans, performance, and capabilities for encouraging or assisting its customers in conserving electricity cost-effectively, and taking into account the published policies, restrictions, and requirements of state regulatory authorities. Section 16.10 of the Commission's regulations requires an applicant for a new license to include in its application a discussion of its record in

[180] 16 U.S.C. § 803(a)(2)(A).

[181] Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19.

[182] Final EA at 329-330 (listing the 12 comprehensive plans).

[183] 16 U.S.C. §§ 803(a)(2)(C), 808(a).

encouraging energy conservation.[184] Bear Swamp Power sells the project's energy to the wholesale market administered by the Independent System Operator of New England (ISO New England).

232. Given the limits of Bear Swamp Power's ability to influence users of the electricity generated by the project, Bear Swamp Power will operate the project in a manner that is consistent with section 10(a)(2)(C) of the FPA.

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

233. Based on a review of Bear Swamp Power's compliance with the terms and conditions of the prior license, Bear Swamp Power's overall record of making timely filings and complying with its license is satisfactory. Therefore, Bear Swamp Power can satisfy the conditions of a new license.

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

234. Commission staff has reviewed Bear Swamp Power's record of management, operation, and maintenance of the Bear Swamp Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports. Staff concludes that the dam and other project works are safe, and that there is no reason to believe that Bear Swamp Power cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electrical Service

235. Commission staff reviewed Bear Swamp Power's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that Bear Swamp Power regularly inspects the project turbine-generator units to ensure they continue to perform in an optimal manner and schedules maintenance to minimize effects on energy transmission. Since the project has been in operation, Bear Swamp Power has undertaken several initiatives to ensure the project is able to operate reliably into the future. Therefore, Bear Swamp Power is capable of operating the project to provide efficient and reliable electric service in the future.

E. Need for Power

236. To assess the need for power from the project, staff looked at the needs in the operating region in which the project is located, which is the Northeast Power Coordinating Council's (NPCC) New England region of the North American Electric

[184] *See* 18 C.F.R. § 16.10 (2024).

Reliability Corporation (NERC). NERC annually forecasts electrical supply and demand in the nation and the region for a 10-year period. NERC's most recent report indicates summer peak demand in the NPCC's New England region is projected to increase at an annual rate of 1.28% from 2025 through 2034. Therefore, the project's power will continue to help meet the regional need for power.

F. Transmission Services

237. Project power is transmitted from the project generators to a 4,075-foot-long, 230-kV overhead transmission line which transmits the power to the step-up transformers. Project power is then carried from the step-up transformers to the regional grid by a 3,960-foot-long, 230-kV overhead transmission line. Bear Swamp Power is not proposing any changes to the project's transmission lines that would affect its own or other transmission services in the region.

G. Cost Effectiveness of Plans

238. Bear Swamp Power proposes to develop and implement measures to protect environmental resources at the project. Based on Bear Swamp Power's record as an existing licensee, these plans are likely to be carried out in a cost-effective manner.

H. Actions Affecting the Public

239. Bear Swamp Power provided opportunities for public involvement in the development of its application for a new license for the Bear Swamp Project. In addition, during the previous license, Bear Swamp Power maintained recreational facilities, including fishing and boating access areas, whitewater access areas, rest areas, and picnicking areas, which enhanced public use of project land. Bear Swamp Power uses the project to help meet regional power needs and the project provides employment opportunities.

Project Economics

240. In determining whether to issue a new license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.,*[185] the Commission uses current costs to compare the costs of the project with the costs of the likely alternative source of power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the

[185] 72 FERC ¶ 61,027 (1995).

costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

241. In applying this analysis to the Bear Swamp Project, Commission staff considered three options: a no-action alternative, Bear Swamp Power's proposal, and the project as licensed herein with mandatory conditions and Commission staff's measures.[186]

242. Under the no-action alternative, the project would continue to operate as it does now. The project has an authorized installed capacity of 676 MW and generates an average of 533,481 MWh of electricity annually. The average annual project cost is about $37,630,167. The alternative source of power's annual cost to produce the same amount of energy is $101,843,390.[187] To determine whether the proposed project is currently economically beneficial, the project's total annual cost is subtracted from the alternative source of power's cost. Therefore, the project costs $64,213,223 less than the alternative source of power's cost.

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[186] Details of Commission staff's economic analysis for the project as licensed herein, and for the other two alternatives, are included in section 4 of the final EA. The costs in the final EA have been revised to account for an updated alternative source of power's cost and include the mandatory conditions under section 401 of the CWA that were not accounted for in the final EA. All costs presented below have been escalated to 2024 dollars.

[187] The alternative source of power's cost of $190.90/MWh is based on staff's estimated cost of constructing and operating a lithium-ion battery storage facility sized similar to the Bear Swamp Project (i.e., 676 MW) capable of providing up to 10 hours of peak energy daily and generating an average of 533,481 MWh annually. The cost is based on the levelized cost of storage (LCOS) for lithium-ion batteries as estimated by the U.S. Department of Energy in their 2023 report "2023 Grid Energy Storage Technology Cost and Performance Assessment" (DOE 2023). Staff interpolated the cost of 1,000 MW of battery storage and 100 MW of storage as reported in DOE 2023 for year 2023, to get a combined cost of $181.8/MWh for the 676 MW Bear Swamp Project. Staff selected lithium-ion storage batteries as a likely source of alternative power to the Bear Swamp Project because it is a storage technology which can offer, configured appropriately, comparable benefits to that of pumped storage. These benefits include providing large amounts of peak energy for periods up to 10 hours in duration, a quick response time in providing power, and a high efficiency in converting stored energy to usable power. This value was then adjusted to 2024 dollars, using the consumers price index, for a total cost of $190.9/MWh.

243. As proposed by Bear Swamp Power, the levelized annual cost of operating the project is $37,688,376. The proposed project would have an authorized installed capacity of 676 MW and generate an average of 533,481 MWh of energy annually. The alternative source of power's cost to produce the same amount of energy is $101,843,390. Therefore, the project would cost $64,155,014 less than the alternative source of power's cost.

244. As licensed herein with mandatory conditions and Commission staff's measures, the levelized annual cost of operating the project is $37,840,710. The proposed project would have an authorized installed capacity of 676 MW and generate an average of 531,861 MWh of energy annually. The alternative source of power's cost to produce the same amount of energy and provide the same capacity benefit is $101,534,126. Therefore, the project would cost $63,693,416 less than the alternative source of power's cost.

245. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include the ability to help maintain the stability of a power system, such as by quickly adjusting power output to respond to rapid changes in system load; and to respond rapidly to a major utility system or regional blackout by providing a source of power to help restart fossil fuel-based generating stations and put them back online.

246. Although the analysis does not explicitly account for the effects inflation may have on the future cost of electricity, the fact that hydropower generation is a renewable resource and relatively insensitive to inflation compared to fossil-fueled generators is an important economic consideration for power producers and the consumers they serve. This is one reason project economics is only one of the many public-interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

Comprehensive Development

247. Sections 4(e) and 10(a)(1) of the FPA[188] require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued must be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a

[188] 16 U.S.C. §§ 797(e), 803(a)(1).

waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

248. The final EA for the project contains background information, analysis of effects, and support for related license articles. Based on the record of this proceeding, including the EA and the comments thereon, licensing the Bear Swamp Project as described in this order will not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of the license.

249. Based on our independent review and evaluation of the Bear Swamp Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the final EA, the project as licensed herein, is selected and found to be best adapted to a comprehensive plan for improving or developing the Deerfield River.

250. This alternative is selected because: (1) issuance of a new license will serve to maintain a beneficial and dependable source of electric energy; and (2) the required environmental measures will protect and enhance aquatic resources, water quality, federally listed species, recreational resources, and cultural resources.

License Term

251. Section 15(e) of the FPA[189] provides that any new license issued shall be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years.

252. On October 19, 2017, the Commission established a 40-year default license term policy for licenses, effective as of October 26, 2017.[190] The Policy Statement provides for exceptions to the 40-year default license term under certain circumstances: (1) establishing a shorter or longer license term if necessary to coordinate license terms for projects located in the same river basin; (2) deferring to a shorter or longer license term explicitly agreed to in a generally-supported comprehensive settlement agreement; and (3) establishing a longer license term upon a showing by the license applicant that substantial voluntary measures were either previously implemented during the prior license term, or substantial new measures are expected to be implemented under the new license.

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[189] 16 U.S.C. § 808(e).

[190] *Policy Statement on Establishing License Terms for Hydroelectric Projects*, 161 FERC ¶ 61,078 (2017) (Policy Statement).

253. Because none of the above exceptions apply in this case, a 40-year license for the Bear Swamp Project is appropriate.

The Director orders:

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

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in these lands, described in the project description and the revised project boundary shown by the Exhibit G filed on April 30, 2018.

Exhibit No.	**FERC Drawing No.**	**Drawing Title**
G-1	P-2669-1001	Project Boundary Map
G-2	P-2669-1002	Project Boundary Map
G-3	P-2669-1003	Project Boundary Map
G-4	P-2669-1004	Project Boundary Map

(2) Project works that include the following two hydropower developments:

Bear Swamp Pumped Storage Development

The Bear Swamp Pumped Storage Development consists of: (1) a 118-acre upper reservoir with a gross storage capacity of 8,300 acre-feet at the normal full water surface elevation of approximately 1,600 feet National Geodetic Vertical Datum of 1929 (NGVD29), which is contained by existing topography and four project dikes with a crest elevation of 1,606 feet NGVD29, including: (a) an approximately 1,300-foot-long, 155-foot-high curved, earth and rock-fill dike (North Dike); (b) an approximately 350-foot-long, 23-foot-high earth and rock-fill dike extending from the eastside of the North Dike (North Dike Extension); (c) an approximately 2,880-foot-long, 140-foot-high earth and rock-fill dike (South Dike); and (d) an approximately 750-foot-long, 50-foot-high earth and rock-fill dike (East Dike); (2) a 420-foot-long emergency spillway excavated into bedrock to the east of the North Dike Extension; (3) an 88-foot-long, 1.5-

to 4-foot-wide, 4-foot-high submerged weir with three 5-foot-wide, 3-foot-high concrete stoplog gates; (4) a 40-foot-diameter concrete inlet/outlet structure located at the bottom of the upper reservoir to the west of the North Dike; (5) an approximately 1,430.5-foot-long tunnel system that conveys water from the upper reservoir to two 11-foot-diameter, steel-lined penstock sections; (6) a 227-foot-long, 79-foot-wide, 182-foot-high underground powerhouse containing two reversible Francis pump turbine-generator units with a total authorized capacity of 666 megawatts (MW); (7) a lower reservoir inlet/outlet structure with four 15-foot-wide, 20-foot-high bays, each equipped with 16-foot-wide, 20.6-foot-high steel slide gates; (8) four 15-foot-wide, 26.7-foot-tall steel trashracks with 6-inch bar spacing; (9) two 13.8-kilovolt (kV) pump motor-generator lead electrical lines, one approximately 890 feet long (east lead), and one approximately 900 feet long (west lead); (10) two 13.8/230-kV step-up transformers; (11) two 230-kV above-ground transmission lines, one approximately 4,075 feet long (south line), and one approximately 3,960 feet long (north line), which terminate at a non-project switchyard owned by National Grid; and (12) appurtenant facilities.

Fife Brook Development

The Fife Brook Development consists of: (1) an 890-foot-long, 130-foot-high earthen rock-fill dam; (2) a 152-acre impoundment with a gross storage capacity of 6,900 acre-feet at a normal maximum water surface elevation of 870 feet NGVD29, which also serves as the lower reservoir for the Bear Swamp Pumped Storage Development; (3) two 36-foot-wide, 40-foot-high steel Tainter spillway gates that are integral with the dam; (4) a concrete intake structure that is integral with the dam and includes an 11.2-foot-wide, 24-foot-tall trashrack with 3-inch bar spacing and a 15-foot-wide, 18-foot-high headgate; (5) a 10-foot-diameter, 200-foot-long steel penstock; (6) an approximately 79.25-foot-long, 44-foot-wide, 94-foot-tall concrete powerhouse containing a 10-MW Francis turbine-generator unit; (7) a 21-foot-long steel-lined draft tube; (8) an approximately 325-foot-long, 30-inch-diameter minimum flow release pipe that is gated at its intake and bifurcates into an approximately 55-foot-long, 20-inch-diameter pipe and an approximately 55-foot-long, 24-inch-diameter pipe; (9) a partially buried (860-foot-long section) and partially overhead (7,060-foot-long section) 13.8-kV transmission line that connects the turbine-generator unit to the regional grid at a non-project substation owned by Great River Hydro, LLC; and (10) appurtenant facilities.

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

Exhibit A: Exhibit A filed on March 30, 2018.

Exhibit F: The following Exhibit F drawings filed on March 30, 2018:

Exhibit No.	FERC Drawing No.	Drawing Title
F-1	P-2669-1005	Dams, Powerhouses & Intakes
F-2	P-2669-1006	Bear Swamp Development Upper Reservoir Dikes, Plans & Sections
F-3	P-2669-1007	Bear Swamp Development Low Level Berm and Intake
F-4	P-2669-1008	Fife Brook Development Spillway, Embankment & Intake
F-5	P-2669-1009	Fife Brook Development Dams, Powerhouses & Intakes
F-6	P-2669-1010	Bear Swamp Development Bear Swamp Powerhouse Floorplan
F-7	P-2669-1011	Bear Swamp Development Cross Section, Intake & Powerhouse
F-8	P-2669-1012	Bear Swamp Development Tailrace Outlet Plan & Sections

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

(C) The Exhibits A, F, and G described above are approved and made part of the license.

(D) This license is subject to the conditions submitted by the Massachusetts Department of Environmental Protection under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), as those conditions are set forth in Appendix A to this order.

(E) The license is also subject to the articles set forth in Form L-3 (Oct. 1975), entitled, "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States" (*see* 54 F.P.C. 1792, *et seq.*), as reproduced at the end of this order, and the following additional articles:

Article 201. *Administrative Annual Charges*. The licensee must pay the United States annual charges, effective the first day of the month in which the license is issued, and as determined in accordance with the provisions of the Commission's regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 676 megawatts.

Article 202. *Reservation of Authority to Require Financial Assurance Measures.* The Commission reserves the right to require future measures to ensure that the licensee maintains sufficient financial reserves to carry out the terms of the license and Commission orders pertaining thereto.

Article 203. *Exhibit Drawings*. Within 45 days of the date of issuance of this license, as directed below, the licensee must file the approved exhibit drawings and geographic information system (GIS) data in electronic file format.

(a) The licensee must prepare digital images of the approved exhibit drawings in electronic format. Prior to preparing each digital image, the licensee must add the FERC Project-Drawing Number (i.e., P-2669-1001 through P-2669-1012) in the margin below the title block of the corresponding approved drawing. The licensee must separate the Exhibit F drawings from the other project exhibits, and label and file them as **Critical Energy Infrastructure Information (CEII) material under 18 C.F.R. § 388.113**. The submission should consist of: (1) a public portion consisting of a cover letter, the Exhibit G drawings, and GIS data; and (2) a CEII portion containing only the Exhibit F drawings**.** Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit Number, Drawing Title, date of this order, and file extension in the following format [P-2669-1001, G-1, Project Boundary Map, MM-DD-YYYY.TIFF].

Each Exhibit G drawing that includes the project boundary must contain a minimum of three known reference points (i.e., latitude and longitude coordinates or state plane coordinates), arranged in a triangular format for GIS georeferencing the project boundary drawing to the polygon data. The licensee must identify the spatial reference for the drawing (i.e., map projection, map datum, and units of measurement) on the drawing and label each reference point. In addition, a registered land surveyor must stamp each project boundary drawing. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY:	black & white raster file
FILE TYPE:	Tagged Image File Format (TIFF), CCITT Group 4 (also known as T.6 coding scheme)
RESOLUTION:	300 dots per inch (dpi) desired, (200 dpi minimum)
DRAWING SIZE:	22" x 34" (minimum), 24" x 36" (maximum)

FILE SIZE: less than 1 megabyte desired

(b) Project Boundary GIS data must be in a georeferenced electronic file format (such as ArcGIS shape files, GeoMedia files, MapInfo files, or a similar GIS format). The filing must include both polygon data and all reference points shown on the individual project boundary drawings. Each project development must have an electronic boundary polygon data file(s). Depending on the electronic file format, the polygon and point data can be included in single files with multiple layers. The georeferenced electronic boundary data file must be positionally accurate to ±40 feet in order to comply with National Map Accuracy Standards for maps at a 1:24,000 scale. The file name(s) must include: FERC Project Number, data description, date of this order, and file extension in the following format [P-2669, boundary polygon or point data, MM-DD-YYYY.SHP]. The filing must include a separate text file describing the spatial reference for the georeferenced data: map projection used (i.e., UTM, State Plane, Decimal Degrees, etc.), the map datum (i.e., North American 27, North American 83, *etc*.), and the units of measurement (i.e., feet, meters, miles, etc.). The text file name must include: FERC Project Number, data description, date of this order, and file extension in the following format [P-2669, project boundary metadata, MM-DD-YYYY.TXT].

Article 204. *Amortization Reserve*. Pursuant to section 10(d) of the Federal Power Act, a specified reasonable rate of return upon the net investment in the project must be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The licensee must set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the licensee must deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The licensee must set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The licensee must maintain the amounts established in the project amortization reserve account until further order of the Commission.

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

Article 205. *Headwater Benefits.* If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee must reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 206. *Documentation of Project Financing.* At least 90 days before starting construction authorized by this license (e.g., new recreation facilities and facility upgrades), the licensee must file, for Commission approval, the licensee's documentation for project financing. The documentation must show that the licensee has acquired the funds, or commitment for funds, necessary to construct, operate, and maintain the project in accordance with the license. The documentation must include, at a minimum, financial statements, including a balance sheet, income statement, and a statement of actual or estimated cash flows over the license term, which provide evidence that the licensee has sufficient assets, credit, and projected revenues to cover project construction, operation and maintenance expenses, and any other estimated project liabilities and expenses.

The financial statements must be prepared in accordance with generally accepted accounting principles and signed by an independent certified public accountant. The licensee must not commence project construction associated with the project before the filing is approved.

Article 207. *As-Built Exhibits*. Within 90 days of completion of construction of the facilities authorized by this license, the licensee must file, for Commission approval, revised Exhibits A, F, and G, as applicable, to describe and show those project facilities as built. If the licensee determines the previously approved exhibits reflect the as-built facilities and no revisions are necessary, the licensee must file a letter stating the approved exhibits reflect the as-built project facilities.

Article 301. *Project Modification Resulting from Environmental Requirements.* If environmental requirements under this license require modification that may affect the project works or operations, the licensee must consult with the Commission's Division of Dam Safety and Inspections – New York Regional Engineer. Consultation must allow sufficient review time for the Commission to ensure that the proposed work does not adversely affect the project works, dam safety, or project operation.

Article 302. *Final Design Documents*. At least 60 days prior to the start of any construction, the licensee must file final design documents with the Commission by eFiling to the Division of Dam Safety and Inspections – New York Regional Office. The design documents must include: final plans and specifications, supporting design report,

Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan. The licensee may not begin construction until the Division of Dam Safety and Inspections – New York Regional Engineer has reviewed and commented on the documents, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

Article 303. *Cofferdam and Deep Excavation Construction Drawings*. Should construction require cofferdams or deep excavations, the licensee must: (1) have a Professional Engineer who is independent from the construction contractor, review and approve the design of contractor-designed cofferdams and deep excavations prior to the start of construction; and (2) ensure that construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of any cofferdams or deep excavations, the licensee must file the approved cofferdam and deep excavation construction drawings and specifications, and the letters of approval with the Commission by eFiling to the Division of Dam Safety and Inspections – New York Regional Office.

Article 304. *Public Safety Plan*. Within one year of license issuance, the licensee must install/implement the following Public Safety Plan improvements at the project:

(1) Install flow release warning systems at the Fife Brook Fishing and Boating Access Area, the Zoar Whitewater Access Area, the Zoar Picnic Area, Carbis Bend, and Bridge to Nowhere project recreation sites. These warning systems must utilize both audible siren and visual flashing light warnings and must be positioned on the bank of the river near the end of the access trail at each site, so as to be most visible and audible to people entering the water and those already in the river.

(2) Install signage of each warning system at the project recreation sites, in order to describe: (a) the flow releases from Fife Brook dam; (b) the safety warning system at the site, including the 15-minute pause in flow increases at 3 megawatts, as required by Article 403; and (c) how to react to the warning signals. Sequential activation of each warning unit should be timed to coincide with the downstream advancement of rising waters to provide a more accurate indication of when rising waters would arrive at a site. The licensee must also post a map at each project recreation site that displays the amount of time it takes for flows (e.g., whitewater flow releases of 800 cubic feet per second [cfs]) to reach each project recreation site downstream of the Fife Brook dam.

(3) Install either an emergency phone or dedicated Wi-Fi access for emergency communications at the Fife Brook Fishing and Boating Access Area, Zoar Whitewater Access Area, Zoar Picnic Area, Carbis Bend, and Bridge to Nowhere project recreation sites.

At least 60 days prior to implementation of the public safety improvements, the licensee must file an updated Public Safety Plan with the Commission by eFiling to the Division of Dam Safety and Inspections – New York Regional Office. The plan must include a description of all safety devices and signage needed to warn the public of fluctuations in flow from the project or otherwise protect the public in the use of project lands and water. For guidance on preparing public safety plans, the licensee can review the *Guidelines for Public Safety at Hydropower Projects* on the Commission's website.

Article 401. Commission Approval, Reporting, Notification, and Filing of Amendments.

(a) *Requirements to File Plans for Commission Approval*

Various conditions of this license found in Massachusetts Department of Environmental Protection's (Massachusetts DEP) section 401 water quality certification (certification) (Appendix A) require the licensee to prepare plans in consultation with other entities for approval, and to implement specific measures without prior Commission approval. The following plans must be submitted to the Commission for approval by the deadlines specified below:

Massachusetts DEP Certification Condition No.	**Plan Name**	**Commission Due Date**
4A(1)	Seasonal Minimum Flow Release Plan	February 15, 2027
4A(3)	Operation Compliance Monitoring Plan	February 15, 2027
9	Invasive Plant Species Monitoring and Management Plan	June 15, 2026

With each plan filed with the Commission, the licensee must include documentation that it developed the plan in consultation with the U.S. Fish and Wildlife Service, Massachusetts DEP, and the Massachusetts Division of Fisheries and Wildlife, and provide copies of any comments received, as well as its response to each comment. The Commission reserves the right to make changes to any plan filed. Upon Commission approval, the plan becomes a requirement of the license, and the licensee must implement the plan, including any changes required by the Commission. Any changes to the above schedule or plans require approval by the Commission before implementing the proposed change.

(b) *Requirement to File Amendment Applications*

Certain Massachusetts DEP's certification conditions in Appendix A contemplate unspecified or conditional long-term changes to project operation or facilities for the purpose of mitigating environmental impacts. These changes may not be implemented without prior Commission authorization granted after the filing of an application to amend the license. In any amendment request, the licensee must identify related project requirements and request corresponding amendments or extensions of time as needed to maintain consistency among requirements.

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

Article 403. *Project Operation*. In addition to the surface elevation limits, reservoir storage capacity requirements, and minimum flow release requirements set forth in the Massachusetts Department of Environmental Protection's (Massachusetts DEP) water quality certification conditions 2, 3, 4, 5, and 6 (Appendix A), the licensee must:

(1) maintain the upper reservoir of the Bear Swamp Pumped Storage Development between the elevations of 1,550 and 1,600 feet National Geodetic Vertical Datum of 1929 (NGVD29);

(2) maintain the Fife Brook impoundment between the elevations of 830 and 835 feet NGVD29 during the hours of 10 a.m. to 12 p.m. on the 32 days of the year when the licensee for the Deerfield Project No. 2323 is scheduled to release whitewater flows from the Deerfield Station No. 5 dam (*See* New England Power Co., 79 FERC ¶ 61,006 (1997)); and

(3) from April 1 through October 31 when restarting the Fife Brook Development powerhouse, ramp generation up to 3 megawatts (MW) and hold the generator at 3 MW for 15 minutes before increasing generation to higher levels.

Planned Deviations

The operational requirements may be temporarily modified if required by operating emergencies beyond the control of the licensee, or for short periods, up to 3 weeks, after mutual agreement among the licensee, the U.S. Fish and Wildlife Service, Massachusetts DEP, and the Massachusetts Division of Fisheries and Wildlife (collectively, resource agencies). After concurrence from the resource agencies, the licensee must file a report with the Secretary of the Commission as soon as possible, but no later than 14 calendar days after the onset of the planned deviation. Each report must

include: (1) the reasons for the deviation and whether project operations were modified, (2) the duration and magnitude of the deviation, (3) any observed or reported environmental effects, and (4) documentation of consultation with the resource agencies. For planned deviations exceeding 3 weeks, the licensee must file an application for a temporary amendment of the operational requirements of this license and receive Commission approval prior to implementation.

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

If the licensee deviates from the impoundment elevation or minimum flow requirements, the licensee must report each incident to the Secretary of the Commission. For any deviation that lasts longer than 3 hours or results in environmental effects, the licensee must file a report as soon as possible, but no later than 14 calendar days after each such incident. The report must include: (1) the cause of the deviation; (2) the duration and magnitude of the deviation; (3) any pertinent operational and/or monitoring data; (4) a timeline of the incident and the licensee's response; (5) documentation that the resource agencies were notified and any comments received, or, affirmation that no comments were received; (6) documentation of any observed or reported environmental effects; and (7) a description of measures implemented to prevent similar deviations in the future.

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

For impoundment elevation or minimum flow deviations lasting 3 hours or less that do not result in environmental effects, the licensee must file an annual report, by January 31, describing each incident that occurred up to 1 month prior to the reporting date, including: (1) the cause of the deviation; (2) the duration and magnitude of the deviation; (3) any pertinent operational and/or monitoring data; (4) a timeline of the incident and the licensee's response; (5) documentation that the resource agencies were notified and any comments received, or, affirmation that no comments were received; and (6) a description of measures implemented to prevent similar deviations in the future. Any deviations that occur within the month prior to the reporting date should be included in the following year's report.

Article 404. *Operation Compliance Monitoring Plan*. Within one year of license issuance, the licensee must file, for Commission approval, an operation compliance monitoring plan that describes how the licensee will document compliance with the operational requirements of this license. The plan must include, at a minimum, the following:

(1) a detailed description of how the licensee will document compliance with the impoundment elevations, minimum flow releases, and whitewater flow releases required by Article 403 (Project Operation) and Massachusetts

Department of Environmental Protection's (Massachusetts DEP) water quality certification conditions 2, 3, 4, 5, and 6 (Appendix A);

(2) a description of the gages and other measuring devices or techniques that will be used to monitor compliance with license requirements, including the locations of all gages and measuring devices;

(3) a provision to maintain a daily log of project operation;

(4) operating procedures to be implemented outside of normal operating conditions, including during: (a) scheduled facility shutdowns and maintenance; and (b) emergency conditions, including those that require unscheduled facility shutdowns and maintenance; and

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

The licensee must prepare the plan after consultation with U.S. Fish and Wildlife Service, Massachusetts DEP, and the Massachusetts Division of Fisheries and Wildlife. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how agency comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

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

Article 405. *State-Listed Rare Plants Management Plan*. Within six months of license issuance, the licensee must file, for Commission approval, a state-listed rare plants management plan that includes measures for the protection of state-listed and special status plants within the project boundary, including specific measures to avoid or minimize adverse project effects on state-listed and special status plants, including effects associated with project-related construction, vegetation alteration, recreational enhancements or maintenance, and land-clearing activities.

The licensee must prepare the plan after consultation with the Massachusetts Division of Fisheries and Wildlife (Massachusetts DFW). The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and

specific descriptions of how agency comments are accommodated by the plan. The licensee must allow a minimum of 30 days for Massachusetts DFW to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons based on project-specific information.

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

Article 406. *Invasive Mussel Species Monitoring and Management*. Within six months of license issuance, the licensee must file, for Commission approval, the Invasive Aquatic Wildlife Species Monitoring and Management Plan required by condition 11 of the Massachusetts Department of Environmental Protection's (Massachusetts DEP) section 401 water quality certification (Appendix A). At a minimum, the plan must include:

(1) a provision to monitor and manage invasive mussel species in project waters;

(2) a provision to reduce the spread of invasive mussel species at the project;

(3) goals and objectives;

(4) provisions for educational training for project maintenance staff;

(5) installation of educational signage regarding invasive mussel species;

(6) a description of best management practices for minimizing the spread of mussel species during project-related construction and maintenance activities;

(7) provisions for reporting observations of invasive mussel species and a description of measures to contain and manage the spread of invasive mussel species, to the Massachusetts Division of Fisheries and Wildlife (Massachusetts DFW) and U.S. Fish and Wildlife Service (FWS); and

(8) an implementation schedule.

The licensee must prepare the plan after consultation with the Massachusetts DEP Massachusetts DFW, and FWS. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how agency comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan

with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons based on project-specific information.

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

Article 407. *Bald Eagle Protection Plan*. Within six months of license issuance, the licensee must file, for Commission approval, a bald eagle protection plan that includes measures for the protection of bald eagles within the project boundary, including measures to avoid killing, injuring, or harassing bald eagles during tree cutting or thinning operations. The plan must also incorporate the following measures from the U.S. Fish and Wildlife Service's (FWS) 2007 National Bald Eagle Management Guidelines, to avoid disturbances to nesting eagles: (1) keep a distance of at least 330 feet between the project-related activity and the nest; (2) maintain forested (or natural) areas between the project-related activity and around nest trees; and (3) avoid construction and maintenance activities on project land during the bald eagle breeding season.

The licensee must prepare the plan after consultation with the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how agency comments are accommodated by the plan. The licensee must allow a minimum of 30 days for agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons based on project-specific information.

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

Article 408. *Protection of Northern Long-Eared and Tricolored Bat.* To protect northern long-eared and tricolored bats, the licensee must avoid removing trees on project land from April 1 through October 31. Tree removal includes cutting, harvesting, destroying, trimming, or any other form of manipulation of non-hazardous trees, saplings, snags, or woody vegetation. Tree removal is not prohibited if it is needed to ensure public or project safety. If emergency tree removal is necessary, the licensee must notify the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife within two business days, providing details of the action and response.

Article 409. *Recreation Facilities Management Plan*. Within one year of license issuance, the licensee must file, for Commission approval, a recreation facilities management plan that includes provisions for operating, maintaining, and improving project recreation facilities. At a minimum, the plan must include the following:

(1) Provisions for the continued operation and maintenance of the following project recreation sites throughout the term of this license: (a) Bear Swamp Visitor Center, (b) Fife Brook Fishing and Boating Access Area, (c) Zoar Whitewater Access Area, (d) Zoar Picnic Area, (e) Bear Swamp Public Hunting Area, and (f) Bear Swamp and Hoosac Tunnel Trail.

(2) Provisions for the operation and maintenance of the following additional project recreation sites throughout the term of this license: (a) the Fife Brook impoundment take-out site and boater egress trail, and (b) the Carbis Bend and Bridge to Nowhere sites as undeveloped project recreation sites.

(3) A description of the project recreation facilities identified in items (1) and (2) above that includes, at a minimum: (a) acreage and amenities provided at each site; (b) hours of operation (if applicable); (c) signage at each site; (d) sanitation and trash removal provisions at each site, including frequency; and (e) a description of soil erosion and sediment control measures to be used where ground-disturbing activities are proposed.

(4) A map identifying the project recreation sites in items (1) and (2) in relation to the project boundary, as licensed herein.

(5) Provisions for maintaining a public website that provides: (a) a map of project recreation facilities; (b) driving directions to project recreation facilities from the Bear Swamp Visitor Center; (c) a description of amenities available at each project recreation facility; (d) the annual schedule for the 106 whitewater flow release days, as required by Article 403 (Project Operation); (e) a 24-hour schedule (12:00 a.m. to 11:59 p.m.) for the timing and size of flows from the Fife Brook Development to the Deerfield River, as required by Article 403 (Project Operation), to be posted by 5 p.m. on the prior day; (f) current outflow from the Fife Brook dam, as required by Article 403 (Project Operation); (g) updates to the current 24-hour schedule and the current outflow information, as required by Article 403 (Project Operation), on a 5-minute basis; (h) a toll-free phone line to provide access to flow information; and (i) a map that displays the amount of time it takes for whitewater releases of 800 cfs to flow from Fife Brook dam to each project recreation site.

The plan must also include provisions to: (a) limit tree cutting at the Zoar Picnic Area to the selective cutting of only hazardous trees; and (b) replace any tree that is removed from the Zoar Picnic Area with another tree that, upon maturity, would provide

the same shade benefits as the tree that is removed. Replacement trees must be of a native species adapted to growing conditions at the site and should be of a different species than the dominant conifer species currently found at the site.

The licensee must prepare the plan after consultation with the U.S. Fish and Wildlife Service, Massachusetts Division of Fisheries and Wildlife, and Massachusetts Department of Environmental Protection. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how agency comments are accommodated by the plan. The licensee must allow a minimum of 30 days for agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons based on project-specific information.

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

Article 410. *Recreation Facilities Site Improvements*. Within one year of license issuance, the licensee must construct the following recreation improvements:

(1) At the Fife Brook Impoundment: (a) construct and maintain a boater take-out site downstream of the Showtime rapid; (b) construct a new boater egress trail within the project boundary from the new boater take-out site downstream of the Showtime rapid and extending upstream to, but not including, the existing vehicle turnaround at Great River Hydro LLC's Dunbar Brook Picnic Area, in consultation with American Whitewater and New England FLOW; and (c) install signs along the river to guide boaters to the new boater take-out.

(2) At the Fife Brook Fishing and Boating Access Area: (a) create up to 10 additional parking spaces at the unpaved, overflow parking area by removing vegetation and placing gravel throughout the parking area; (b) mark the parking spaces at the overflow parking area to make the most efficient use of the space; and (c) install handrails at the existing staircases.

(3) At the Zoar Whitewater Access, widen the access trail to a width of 8 feet.

(4) At the Zoar Picnic Area, install and maintain: (a) at least two additional seasonal restrooms; (b) a changing facility with at least four changing stalls; (c) at least six seasonal trash receptacles, with five of them located near picnic tables and one at the exit; (d) a second staircase leading from the picnic area to the river; and (e) handrails at both the existing and proposed staircases.

Within 90 days of completing construction of the site improvements discussed above, the licensee must file with the Commission a report documenting each completed recreation site. The documentation must show each completed recreation site, including all constructed facilities, and may include photographs, aerial photographs, drawings that reflect the as-built condition, or other methods, provided that the documentation clearly demonstrates that each recreation site has been constructed in substantial conformity as approved. The report must include confirmation that the approved recreation sites are located inside the project boundary. The licensee must propose a schedule to file, for Commission approval, revised Exhibit G (project boundary) drawings that incorporate the approved recreation sites inside the project boundary. The report must also include a record of the licensee's consultation with American Whitewater and New England FLOW on the construction of the new boater egress trail to be constructed at the upper reaches of the Fife Brook impoundment, including copies of comments and recommendations on the trail and a description of how stakeholder comments were addressed. The Commission reserves the right to require changes to the report.

Article 411. *Programmatic Agreement and Historic Properties Management Plan*. The licensee must implement the "Programmatic Agreement between the Federal Energy Regulatory Commission and the Massachusetts State Historic Preservation Office (SHPO) for Managing Historic Properties that May be Affected by Issuing a License to Bear Swamp Power Company, LLC for the Continued Use and Operation of the Bear Swamp Project in Berkshire and Franklin Counties, Massachusetts (FERC No. 2669-089)," executed on August 26, 2021, and including, but not limited to, the Historic Properties Management Plan (HPMP) for the project. Pursuant to the requirements of this Programmatic Agreement, the licensee must file, for Commission approval, an HPMP within one year of issuance of this order.

The Commission reserves the authority to require changes to the HPMP at any time during the term of the license. If the Programmatic Agreement is terminated prior to Commission approval of the HPMP, the licensee must obtain approval from the Commission and the Massachusetts SHPO before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effects.

Article 412. *Use and Occupancy*. (a) In accordance with the provisions of this article, the licensee must have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee must also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants

of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee must take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

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

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kilovolts or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee must

file with the Commission a copy of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed. No report filing is required if no conveyances were made under paragraph (c) during the previous calendar year.

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

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee must consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee must determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed must not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the

grantee must take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee must not unduly restrict public access to project lands and waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project must be consolidated for consideration when revised Exhibit G drawings would be filed for approval for other purposes.

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

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

(G) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 825*l*, and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2022). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing constitutes acceptance of this order.

for
Terry L. Turpin
Director
Office of Energy Projects

Form L-3
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

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

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

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

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

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said

representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

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

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

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

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

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

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

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

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may

prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

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

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

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own

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

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

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

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

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

Article 21. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the

environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

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

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

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

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

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

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

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

APPENDIX A

Water Quality Certificate Conditions
Issued by the Massachusetts Department of Environmental Protection
Filed October 28, 2022

CERTIFICATION PROVISIONS

MassDEP's authority to issue this certification is conferred by M.G.L. c. 21, § 27(3). Based on a review of the WQC request, the information included in the administrative record for the FERC licensing proceeding for the Project, the information provided by BSPC and provided by the public during the comment period, and other publicly available information on file with MassDEP, MassDEP finds that BSPC has provided reasonable assurance that the activity will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, Massachusetts Surface Water Quality Standards at 314 CMR 4.00 and other appropriate requirements of state law, as set forth herein. Therefore, MassDEP hereby grants certification for the Project subject to the conditions set forth below. This certification shall take effect on the date that FERC issues a new license for the Bear Swamp Project (FERC No. 2669).

Pursuant to M.G.L. c. 21, §§ 27, 42 and 44, BSPC shall comply with the following § 401 Certification conditions which MassDEP finds are necessary to assure compliance with the applicable provisions of the Federal Clean Water Act Sections 208(e), 301, 302, 303, 306, and 307 and other appropriate requirements of State law:

1. BSPC shall operate the Project in accordance with the conditions contained in this certification, and the proposal included in Bear Swamp Power Company's Final License Application (FLA) filed with FERC on March 30, 2018, as it may be modified by FERC's new license (the FERC license). Any modifications made by BSPC to its proposal in the FLA after the issuance of this certification but prior to FERC's new license that would have a significant or material effect on the conclusions or conditions contained in this certification shall be submitted to MassDEP promptly for review and approval prior to licensing.

2. **Project Operations.** The PSD shall be operated as a pumped storage facility in accordance with this certification and the provisions included in the FLA with a normal allowable usable storage capacity of 4,600 acre-feet, and an allowable drawdown of 40 feet in the Fife Brook impoundment from normal maximum full elevation of 870 feet NGVD29 to elevation of 830 feet NGVD29.

   The FBD shall be operated in a run-of-release mode in accordance with this certification and the provisions of the FLA. Run-of-release mode requires BSPC to contemporaneously pass through minimum flows mandated to be released to the lower reservoir from Station No. 5. As necessary, BSPC will carry a positive balance

in the Fife Brook impoundment of up to 150 acre-ft to support provision of the seasonal minimum flows (the "positive balance" or "safety volume" as described in the FLA). Use and replenishment of the positive balance shall be contingent upon and taken from inflow as received from the Station No. 5 ("Inflow"). PSD storage shall not be used to replenish the positive balance, and BSPC shall not be required to carry or use more than 150 acre-ft positive balance for seasonal minimum flows.

3. **Year-Round Minimum Flow.** Upon the Commission's issuance of a new license for the Project, BSPC shall maintain a year-round continuous minimum flow of 125 cfs for the protection of aquatic resources in the Deerfield River, from and as measured at, the FBD. If the Inflow regime from the DRP Station No. 5 is changed from the regime in existence as of the date of the Commission's issuance of a new License for the Bear Swamp Project so as to reduce continuous minimum flows requirements from the DRP, BSPC shall release 125 cfs through use of the Inflow and positive balance so long as the Inflow allows.

4. **Seasonal Minimum Flow**. From November 1 of each year through April 15 of the following year, BSPC shall maintain a minimum flow of 225 cfs, from and as measured at the FBD, for the overwintering protection of trout redds in Long Pool and Beaver Island. The provision of 225 cfs shall not compromise BSPC's ability to provide 125 cfs.

   Notwithstanding the foregoing, under certain unusual circumstances, reductions in seasonal minimum flows from 225 cfs to 125 cfs, are anticipated herein and, therefore, are not considered a reportable planned or unplanned deviation. BSPC is not required to increase the available Inflow or its timing into the Project boundary, utilize more than the combination of Inflow into the Project boundary and up to 150 acre-feet of safety volume to provide the 225 cfs seasonal minimum flow from the FBD, or compromise the ability of BSPC to provide 125 cfs continuous minimum flow. Implementation of the foregoing shall be consistent with the following, inclusive of Tables 1 and 2 below:

   - BSPC shall achieve a 150 acre-feet positive balance at the end of the first FBD generation cycle on November 1st of each year, and at the end of each Fife Brook generation cycle thereafter until April 15th of the following year. Scheduling of 225 cfs for each day will be determined by the midnight-to-midnight Station No. 5 flow forecast schedule ("Release Schedule") for the current and next day releases pursuant to Tables 1 and 2 below, with a Station No. 5 generation cycle defined as a Station No. 5 main unit generation or equivalent spill event capable of replenishing at least the entire 150-acre-foot positive balance and simultaneously allowing provision of at least 125 cfs during the event.
   - Beginning on November 1st BSPC shall determine the minimum flow from the FBD for the balance of the current day pursuant to the criteria in Table 1.

Table 1. Minimum Flow Criteria and Requirements Following Fife Brook Generation

Criteria	Fife Brook Minimum Flow Release Requirement
Release Schedule forecasts a Station No. 5 generation cycle within 18 hours of the end of the last Fife Brook generation cycle.	BSPC shall release 225 cfs using up to 100 acre-feet of the 150 acre-feet of positive balance. When 50 acre-feet or less of positive balance is remaining, BSPC shall release 125 cfs until the end of the next Station No. 5 generation cycle.
Release Schedule does not forecast a Station No. 5 generation cycle within 18 hours of the end of the last Fife Brook generation cycle.	BSPC shall release 125 cfs until the end of the next Station No. 5 generation cycle.

- When the next day's Station No. 5 release schedule is made available to BSPC, BSPC shall adjust the FBD minimum flow pursuant to the criteria in Table 2 and release the adjusted minimum flow until the end of the next Station No. 5 generation cycle.

Table 2. Minimum Flow Criteria and Requirements Following Receipt of the DRP Station No. 5's Next Day Release Schedule

Criteria	Fife Brook Minimum Flow Release Requirement
The next day's Release Schedule forecasts a Station No. 5 generation cycle within 18 hours of the end of the last Fife Brook generation cycle.	BSPC shall release 225 cfs using the remaining positive balance above 50 acre-feet. When 50 acre-feet or less of positive balance is remaining, BSPC shall release 125 cfs until the end of the next Station No. 5 generation cycle.
The next day's Release Schedule does not forecast a Station No. 5 generation cycle within 18 hours of the end of the last Fife Brook generation cycle.	BSPC shall release 125 cfs until the end of the next Station No. 5 generation cycle.

A. Compliance schedule.

1. Seasonal Minimum Flow Release Plan. Within one (1) year of the Commission's issuance of a new license for the Project, BSPC shall develop a Seasonal Minimum Flow Release Plan (SMFRP). The SMFRP shall include, at a minimum, (1) functional design drawings and calculations showing the proposed modifications to the Project to allow for

a seasonal minimum flow release from the FBD of 225 cfs from November 1 through April 15; (2) a construction schedule; (3) a description of the measures BSPC will take to provide a continuous 125 cfs minimum flow release from the FBD during construction of the new seasonal minimum flow system; and (4) provisions for providing minimum flows by other means in the event of failure of the minimum flow system ("Backup Plan"). BSPC will submit the draft SMFRP to MassDEP, the USFWS, and MassWildlife for a 60-day review and comment period prior to submittal to the Commission. BSPC shall address the comments received, if any, in its submittal to the Commission.

2. BSPC shall initiate and complete construction of a new minimum flow system to provide the seasonal 225 cfs minimum flow in accordance with the schedule approved by the Commission in the SMFRP and/or in any order issued by the Commission. Excepting any Commission or third-party delays in the Commission's approval process, BSPC shall begin providing the 225 cfs seasonal minimum flow on the November 1st following completion of the construction or on the November 1st occurring three (3) years after the Commission's issuance of a new license for the Project, whichever occurs earlier.

3. Operation Compliance Monitoring Plan. Prior to completing construction of the new minimum flow system, BSPC shall revise the Operation Compliance and Monitoring Plan (OCMP) required by BSPC's license to describe how BSPC will document compliance with the seasonal 225 cfs minimum flow requirement. At a minimum, the revised OCMP shall include (1) a detailed description of how BSPC will document compliance with the 225 cfs seasonal minimum flow release, including a plan and schedule for conducting a field verification of the 225 cfs seasonal minimum flow across all reservoir levels; (2) a description of any mechanisms or structures that will be used, including any periodic maintenance and/or calibration necessary to ensure the devices work properly; (3) the level of manual and automatic operations, (4) the methods used for recording data, including mechanisms for recording data on Project operations to verify proper timing and minimum flow releases (5), the methods and frequency for reporting monitoring data to the Commission, MassDEP, USFWS, and MassWildlife. BSPC will submit the revised Operation Compliance Monitoring Plan to MassDEP, the USFWS, and MassWildlife for a 30-day review and comment period prior to submittal to the Commission. BSPC shall address the comments received, if any, in its submittal to the Commission.

5. **Odonate Protective Flow Regime**

A. **Whitewater Flow Releases**. Beginning in the calendar year following the Commission's issuance of the license, BSPC shall provide 106 annual whitewater flow releases of 800 cfs from the FBD on 50 weekend days and 56 weekdays from April 1 through October 31 for a minimum duration of 3 hours. The 106 scheduled whitewater flow releases include 74 days of releases from the FBD only (Fife Brook Only Release Days) and 32 days that Station No. 5 is scheduled to release whitewater flows from into the Station No. 5 bypass reach (Station No. 5 Bypass Reach Release Days), (*See* New England Power Co., 79 FERC ¶ 61,006 (1997)). The timing of scheduled whitewater releases shall be in accordance with Table 3.

Table 3. Scheduled Whitewater Release Times

Dates	**Scheduled Release Times**	
	Fife Brook Only Release Days (N=74)	*Station No. 5 Bypass Reach Release Days (N=32)*
April 1 – October 31	11:30 a.m.	Releases shall begin between 11:30 a.m. and 12:00 p.m.

B. On May 15 of the calendar year following the Commission's issuance of a new license for the Project, BSPC will implement the flow regimes in Table 4 for the periods of May 15 – June 15 and July 8 – August 31, for the protection of odonates. These flows will thereafter be applied annually for the duration of the license.

Table 4. Odonate Flow Regime

Dates	**Odonate Flow Regime**	
	Scheduled Whitewater Release Days	*Non-scheduled Whitewater Release Days*
May 15 – June 15	BSPC shall provide stable or diminishing flows from the FBD from 7:00 a.m. through the scheduled whitewater release time identified in Table 3.	BSPC shall provide stable or diminishing flows from the FBD from 7:00 a.m. through a start time of generation flows that averages 11:30 a.m. or later.
July 8 – August 31	BSPC shall provide stable or diminishing flows from the FBD from 7:00 a.m. through the scheduled whitewater release time identified in Table 3.	BSPC shall provide stable or diminishing flows from the FBD from 7:00 a.m. through a start time of generation flows that averages 11:30 a.m. or later.

C. Notwithstanding the schedule above, circumstances may arise where Inflows to the Project exceed the capacity of Fife Brook impoundment and the above schedule would cause it to rise above permitted levels. In such circumstances, BSPC may deviate from the above schedule on non-scheduled whitewater release days, provided that:

From May 15 – June 15:

- Generation flows may not start earlier than 10:00 a.m. on any days during this period.
- Generator ramping (up to no more than 3 MW) may begin no more than 15 minutes prior to the designated start time of any release.
- Releases earlier than 11:30 a.m. may occur on no more than 5 days during this time period.
    - Two emergencies (as described in Condition 16 of this certification) which result in early releases will count towards the total cap of 5 early releases (before 11:30 a.m.) until the cap has been met. Weather, meteorological, or rainfall/runoff events will not count towards the cap.
- If an early release occurs, BSPC will delay the next consecutive release to compensate, and the times of the releases will be averaged to meet the prescribed times. Averaging shall be subject to the following calculations:
    - Any release after 2:00 p.m. will equate to 2:00 p.m. for averaging purposes.
    - Averaging must be done in groups of no more than two days; for example, one 12:30 p.m. start time can be paired with one 10:30 a.m. start time to average 11:30 a.m., but one 2:00 p.m. start time cannot be paired with two 10:15 a.m. start times.

From July 8 – August 31:

- Generation flows shall not start earlier than 9:00 a.m. on any days during this period.
- Generator ramping (up to no more than 3 MW) shall begin no more than 15 minutes prior to the designated start time of any release.
- Releases earlier than 11:30 a.m. may occur on no more than 10 days during this time period.
    - Five emergencies (as described in Condition 16 of this certification) which result in early releases will count towards the total cap of 10 early releases (before 11:30 a.m.) until the cap has been met.

Weather, meteorological, or rainfall/runoff events will not count towards the cap.

- If an early release occurs, BSPC will delay the next consecutive release to compensate and the times of the releases will be averaged to meet the prescribed times. Averaging shall be subject to the following calculations:
    - Any release after 1:00 p.m. will equate to 1:00 p.m. for averaging purposes.
    - Averaging must be done in groups of no more than two days; for example, one 1:00 p.m. start time can be paired with one 10:00 a.m. start time to average 11:30 a.m., but one 1:00 p.m. start time cannot be paired with two 10:45 a.m. start times.

6. **Temporary Modifications & Operating Emergencies.** Requirements of this certification are subject to temporary modification for operating emergencies, or if required by any of the following circumstances which are beyond the reasonable control of BSPC:

    - Drought or ice conditions;
    - Equipment emergencies that render the minimum flow system incapable of providing the required minimum flows. In such case and when sufficient water is available, BSPC shall implement the Backup Plan;
    - Other Force Majeure events[1];
    - Any Project operations needed relative to avoidance of, or response and follow-up to ISO New England Emergency or Abnormal System Conditions and related Emergency Operations and Preparedness, and Reliability concerns as defined by ISO New England, including:
        - Emergency - Abnormal condition of an electric power system requiring manual or automatic action to maintain system frequency or to prevent the involuntary loss of load, equipment damage, or tripping of system elements that could adversely affect the reliability of the system or the safety of

[1] "Force Majeure" is defined as any event arising from causes beyond the reasonable control of or of any entity controlled by BSPC, including its engineers, consultants, contractors and subcontractors, which delays or prevents the timely performance of any obligation under this certification notwithstanding BSPC's reasonable efforts to fulfill the obligation. The requirement that BSPC exercise "reasonable efforts" includes using reasonable efforts to anticipate any potential Force Majeure event and reasonable efforts to address the effects of any such event (a) as it is occurring, and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible.

people or property. Emergency could also be a fuel shortage requiring departure from normal operating procedures to minimize the use of such scarce fuel or any condition that requires the implementation of emergency procedures by the ISO.

- Abnormal System Conditions - When ISO New England or a local control center determines that the reliability of the New England power system is compromised. Typical indicators are described in Master/LCC Procedure No. 2—Abnormal Conditions Alert, and include a variety of circumstances, such as deficiencies of operating reserve, low transmission voltages, and geomagnetic disturbance.
- Emergency Operations and Preparedness - Steps the ISO takes in times of extreme, abnormal system conditions to prevent loss of load, equipment damage, or tripping of system elements that could adversely affect system reliability and safety.
- Reliability - The assurance that electric power is available even under adverse conditions, such as storms or outages of generation or transmission lines.

- Any temporary deviation in Project operations needed to support public or employee safety or as directed by authorized fire, law enforcement, first responders, or public safety officials;
- A temporary deviation in operation is requested by MassDEP or MassWildlife to protect fish and wildlife or public safety; and
- A change in Project operations is necessary for purposes of dam safety.

Under such conditions, BSPC will not be deemed to be in violation of this certification, provided that, if Project operations are so modified, the Project owner shall notify MassDEP, MassWildlife and the USFWS in advance, if knowable, or as soon as possible otherwise, but no later than 48 hours after each such incident and shall provide the reason for the modification. Further, flows may be modified for short periods upon mutual agreement between the Project owner and MassDEP.

7. **Odonate Mitigation Fund**. Following the Commission's issuance of a new license for the Project, BSPC shall, after consulting with the NHESP of MassWildlife as to the mechanism of deposit, provide $33,250 annually to MassWildlife, unless MassWildlife provides other instructions to BSPC (subject to annual inflation adjustments in accordance with the U.S. Consumer Price Index ("CPI") as calculated from the date the Commission issues a new license) for the term of the license and any extensions, provided however that upon request by BSPC, and no sooner than 2 years after the implementation by GRH of any revised flow regime for Station No. 5, MassDEP will entertain a good-faith consideration of downward adjustment to the annual payments for reduced impacts downstream of the FBD from flow regimes imposed on the DRP Station No. 5 in 2037.

8. **Aquatic Resource Protection Fund**. Within three (3) years of the Commission's issuance of a new license for the Project, BSPC shall provide $125,000 to MassDEP or its designee which can be used as MassDEP deems appropriate for the protection of aquatic resources in the Deerfield River. BSPC may provide either (a) a one-time payment of funds, or (b) allocation of funds over the 3-year period (payment made in year one will not be subject to inflation; payments made in years two and/or three will be subject to annual inflation adjustments in accordance with the CPI, as calculated from the date of the Commission's issuance of a new license).

9. **Invasive Plant Species Monitoring and Control Plan**. BSPC shall implement the conditions in the new license issued by the Commission, including development and implementation of an Invasive Plant Species Monitoring and Management Plan. No later than 30 days following the Commission's issuance of a new license for the Project, BSPC will provide a one-time payment in the amount of $5,000, and annual payments of $2,000 thereafter, over the term of the new license (subject to annual inflation adjustments in accordance with the CPI as calculated from the date the Commission issues a new license), for use by NHESP or its designee(s) to conduct invasive plant surveys, mapping, control, management or eradication and planning necessary to accomplish those tasks.

10. **CPI**. The initial annual amounts specified to be paid in each of paragraphs 7, 8 and 9 (each, a "Base Payment') shall represent payment for the first full calendar year following license issuance. Subsequent year payments shall be changed by the percentage change in the Consumer Price Index from the preceding calendar year. "Consumer Price Index" shall mean the United States Department of Labor's Bureau of Labor Statistics' annual Consumer Price Index, All Urban Consumers (CPI-U), All-Items, U.S. City Average, not seasonally adjusted, and Index Base Period 1982-84=100, or successor index reasonably acceptable to BSPC and MassDEP. Payment shall be made on or before June 30 of each calendar year during the term of the license.

11. **Invasive Aquatic Wildlife Species Monitoring and Management Plan**. BSPC shall implement the conditions in the new license issued by the Commission, including development and implementation of an Invasive Aquatic Wildlife Species Monitoring and Management Plan. During the term of the new license**,** upon the request of MassWildlife, BSPC will update the Invasive Aquatic Wildlife Species Monitoring and Management Plan upon the addition of invasive aquatic wildlife species to the Commonwealth's Aquatic Invaders List or successor list.

12. **Land Protection and Public Access**. BSPC shall operate the Project consistent with the Commission's Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States (Form L-3) included in the license issued by the Commission (as may be amended) ("the FERC license"). In accordance

with Article 18 of the FERC license, and so far as is consistent with proper operation of the Project as specified in the FERC license, BSPC shall allow the public free access, to a reasonable extent, to Project waters and adjacent Project lands owned by BSPC (as shown in the April 30, 2018 revisions to Exhibit G of the FLA) as it may be modified by the FERC license), for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting. BSPC shall continue to maintain the Project recreation facilities described in the 2018 FLA as it may be modified by the FERC license, including the:

- Bear Swamp Visitor Center;
- Fife Brook Fishing and Boating Access Area;
- Zoar Whitewater Access Area;
- Zoar Picnic Area;
- Bear Swamp Public Hunting Area; and
- Bear Swamp Trail.

Provided, that BSPC may reserve from public access such portions of the Project waters, adjacent lands, and Project facilities as may be necessary for the protection of life, health, and property. BSPC may limit or restrict public access to Project lands or waters to comply with the Commission's public safety and security guidance and public safety and security plans filed with the Commission.

Provided further, that any modifications made by BSPC to its proposal in the FLA after the issuance of this certification but prior to FERC's new license that would have a significant or material effect on the conclusions or conditions contained in this certification shall be submitted to MassDEP promptly for review and approval prior to licensing.

13. Prior to or at the time of filing with the Commission, BSPC shall serve all representatives of the MassDEP and MassWildlife on the service list with a copy of any request BSPC may file for amendment of the license, amendment or appeal of any fish and wildlife-related license conditions, or extension of time requests for project construction or implementation of license article provisions.

14. Any modifications made by BSPC to the proposal in BSPC's Final License Application (FLA) filed with FERC on March 30, 2018 after the issuance of this certification but prior to issuance by FERC of BSPC's new license will be served to the service list. If MassDEP determines that such amendment(s) to the FLA before the issuance of the BSPC's new license would have a significant or material effect on the conclusions or conditions contained in this certification, MassDEP may notify BSPC that the modification is subject to MassDEP review and approval prior to licensing.

15. This certification incorporates specific conservation measures (Paragraphs 5, 7, 8, 9 and 11) to address impacts to state-listed species, which MassWildlife has indicated are consistent with MESA. MassWildlife has also indicated that no further MESA review will be required regarding these matters provided that BSPC adheres to the conditions outlined in: the Settlement Agreement among BSPC, the Department, and Trout Unlimited; this certification; and FERC's Final License.

16. This certification does not grant or affirm any property rights, license, or privilege in any water or any right of use in any water.

17. BSPC shall obtain and comply with all required federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the construction and operation of the Project.

18. BSPC shall conduct all activities in conformance with all applicable provisions of federal, state and local laws and regulations.

19. All construction, maintenance and repair activities, including disposal of debris and removal of sediments in impounded areas, shall be conducted in a manner so as not to impair water quality and in compliance with any required approvals.

20. To the extent allowed by federal and state law, MassDEP reserves the right to request modifications of this certification if a court of competent jurisdiction or appropriate state appeals board stays, vacates or remands this certification. BSPC retains any rights to participate in any proceeding or filing at FERC or MassDEP relating to modification of the certification.

21. BSPC shall allow any employee, agent, consultant, contractor or authorized representative of MassDEP or MassWildlife to (i) enter the facilities, (ii) inspect, at reasonable times, any facilities, equipment, practices, or operations regulated or required under the certification (iii) have access to and copy, at reasonable times, any records that must be kept under the conditions of the certification and (iv) sample or monitor at reasonable times for the purpose of assessing compliance with the terms and conditions of this certification . Any person must comply with all applicable safety and security standards and requirements established by BSPC or federal and state occupational health or safety regulations for entering the facilities.

22. If any event arising from causes beyond the reasonable control of BSPC or of any entity controlled by BSPC, including its engineers, consultants, contractors and subcontractors, that delays or prevents the timely performance of any obligation under this certification notwithstanding BSPC's reasonable efforts to fulfill the obligation (a "force majeure event)" occurs , then the time for performance shall be extended for an appropriate period of time. The requirement that BSPC exercise "reasonable efforts"

includes using reasonable efforts to anticipate any potential Force Majeure event and all reasonable efforts to address the effects of any such event (a) as it is occurring, and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. BSPC shall bear the burden of demonstrating that a force majeure event has occurred or will occur, and that the delay was beyond the reasonable control and without the fault of BSPC. Such an extension of time must be in writing to have effect.

23. Submissions under this Certification shall be sent to:

MassDEP: Massachusetts Department of Environmental Protection
Wetlands and Waterways Program
1 Winter Street
Boston, MA 02108

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Western Regional Office
436 Dwight Street
Springfield, MA 01103

MassWildlife: Massachusetts Division of Fisheries and Wildlife
Field Headquarters
Assistant Director of Fisheries
1 Rabbit Hill Road
Westborough MA 01581

Massachusetts Division of Fisheries and Wildlife
Assistant Director of Natural Heritage & Endangered Species
Attn: Regulatory Review
1 Rabbit Hill Road
Westborough MA 01581

USFWS: United States Fish and Wildlife Service
New England Field Office
Attention: Supervisor
70 Commercial Street, Suite 300
Concord, NH 03301-5087

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