

New Hampshire Department of Environmental Services
WATER QUALITY CERTIFICATION
In Fulfillment of
NH RSA 485-A:12, III

Certification Number	WQC 2021-FERC-004
Activity Name	Campton Hydroelectric Project (FERC Project No. 3253)
Activity Location	Campton, New Hampshire (Grafton County)
Potentially Affected Surface Waters Near the Activity (other affected surface waters may exist)	Mad River: Riverine section upstream of the Project impoundment and the impoundment (NHLAK700010401-02-01) Riverine section downstream of the Project Dam (NHRIV700010401-17)
Owner/Applicant	Mad River Power Associates L.P.
Agent Filing Application on Behalf of Owner/Applicant	Ian Clark, Manager Mad River Associates L.P. 10 Roberts Lane, Suite 201 Ridgefield, CT 06877
Applicable Federal License or Permit Requiring Section 401 Water Quality Certification	Federal Energy Regulatory Commission - Subsequent License for Minor Water Power Project
Decision	October 7, 2022
Date of Issuance	October 7, 2022

A. INTRODUCTION

Mad River Power Associates L.P. (the Applicant) has applied for a license from the Federal Energy Regulatory Commission (FERC) to continue the operation and maintenance of the Mad Hydroelectric Project (Project or Activity) located on the Mad River in the Town of Campton, Grafton County, New Hampshire. The Applicant proposes to continue operating the Project as run-of-river. The Project has a total installed generating capacity of 0.639 megawatts (MW) but the Applicant proposes to increase the generating capacity of the Project to 0.766 MW with an upgrade to one of the three turbines. A more complete description of the Project is provided in Findings D-3 through D-5 of this certification.

In accordance with the Section 401 of the federal Clean Water Act (CWA) and New Hampshire law under NH RSA 485-A:12, III, the Applicant has applied for a water quality certification (WQC or certification) from the New Hampshire Department of Environmental Services (NHDES) for a FERC license. The purpose of the certification is to provide assurance that discharges from the proposed Project will comply with New Hampshire surface water quality standards that are specified under NH RSA 485-A:8 and NH Code of Administrative Rules Env-Wq 1700 (Surface Water Quality Standards). Additional details are provided herein.

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Documents cited in this certification that were filed with FERC, can be accessed on the [FERC elibrary](#) by date or FERC Document Accession Number.

B. DECISION

Based on the facts, laws, findings and conditions included herein, NHDES has determined that there is reasonable assurance that discharges from construction and operation of the proposed Project will comply with New Hampshire Surface Water Quality Standards¹. NHDES hereby grants this certification in accordance with RSA 485-A:12, III, subject to the conditions in Section E of this certification.

C. FACTS AND LAWS

Federal Certification Laws and Regulations

- C-1. Section 401(a)(1) of the CWA states in part: “Any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate [...] that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title. [...] No license or permit shall be granted until the certification required by this section has been obtained or has been waived [...] No license or permit shall be granted if certification has been denied by the State [...].”
- C-2. Section 401(d) of the CWA states in part: “Any certification provided under this section [401] shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with [enumerated provisions of the CWA] and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section.”
- C-3. Federal regulations regarding Section 401 water quality certification may be found in the Code of Federal Regulations (CFR), Title 40, PART 121 (40 CFR 121) titled “State Certification of Activities Requiring a Federal License or Permit”. On July 13, 2020, the U.S. Environmental Protection Agency (EPA) published final revisions to these regulations in the Federal Register (Vol. 85, No. 134, pages

¹ Federal CWA Section 401 regulations (40 CFR § 121.7(c)), which is applicable to water quality certification requests submitted on or after September 11, 2020, requires States to include a statement in the certification that the discharge from the proposed project “will comply” with water quality requirements as defined in 40 CFR § 121.1(n). See Fact C-3.

42210 to 42287), which became effective on September 11, 2020.

- C-4. 40 CFR § 121.1(f) defines “discharge” as “a discharge from a point source into a water of the United States.”²
- C-5. The term “discharge,” as applied under section 401 of the CWA means the potential for a discharge. It does not need to be a certainty, only that it may occur should the federal license or permit be granted. Further, the discharge does not need to involve the addition of pollutants (such as water released from the tailrace of a dam). As the U.S. Supreme Court has stated: “When it applies to water, ‘discharge’ commonly means a ‘flowing or issuing out’” and an addition of a pollutant is not “fundamental to any discharge.”
- C-6. The CWA Section 502(7) (33 U.S.C. §1362(7)) defines “navigable waters,” as “waters of the United States”.
- C-7. Waters of the United States are defined in 40 CFR §122.2.

State Certification Law

- C-8. NH RSA 485-A:12 III, states: “No activity, including construction and operation of facilities, that requires certification under section 401 of the Clean Water Act and that may result in a discharge, as that term is applied under section 401 of the Clean Water Act, to surface waters of the state may commence unless the department certifies that any such discharge complies with the state surface water quality standards applicable to the classification for the receiving surface water body. The department shall provide its response to a request for certification to the federal agency or authority responsible for issuing the license, permit, or registration that requires the certification under section 401 of the Clean Water Act. Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22.”

State Surface Water Quality Standards ³

- C-9. The Surface Water Quality Standards under NH RSA 485-A:8 and Env-Wq 1700 together fulfill the requirement of section 303 of the CWA that the State of New Hampshire adopt water quality standards consistent with the provisions of the CWA. Further, RSA 485-A:8, I and II, establish two classes of surface waters in New Hampshire for the purposes of adopting Surface Water Quality Standards for each classification: Class A and Class B.
- C-10. Env-Wq 1701.01, titled “Purpose”, states: “The purpose of these rules is to establish water quality standards for the state’s surface water uses as set forth in RSA 485-A:8, I, II, III and V. These standards are intended to protect public health and welfare, enhance the quality of water and serve the purposes of the federal Clean Water Act, 33 U.S.C. 1251 et seq., and RSA 485-A. These standards provide for the protection and propagation of fish, shellfish, and wildlife, and provide for such uses as recreational activities in and on the surface waters, public water supplies, agricultural and industrial uses, and

² The Supreme Court case that is referred to is *S.D. Warren Co. v. Maine Board of Environmental Protection et al*, 547 U.S. 370, 126 S. Ct. 1853 (2006).

³ All New Hampshire Surface Water Quality Standards apply to the Project. The standards specifically called out in the certification should not be interpreted as the only standards that may apply.

navigation in accord with RSA 485-A:8, I and II.”

- C-11. Env-Wq 1701.02, titled “Applicability”, states: “These rules shall apply to:
- (a) All surface waters; and
 - (b) Any person who:
 - (1) Causes any point or nonpoint source discharge of any pollutant to surface waters;
 - (2) Undertakes hydrologic modifications, such as dam construction or water withdrawals; or
 - (3) Undertakes any other activity that affects the beneficial uses or the water quality of surface waters.”
- C-12. Env-Wq 1702.44 defines “surface waters” as “‘surface waters of the state’ as defined in NH RSA 485-A:2, XIV and waters of the United States as defined in 40 CFR 122.2.”
- NH RSA 485-A:2, XIV defines “surface waters of the state” as “perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial.”
- C-13. Env-Wq 1702.05 defines “benthic community” as “the community of plants and animals that live on, over, or in the substrate of the surface water.”
- C-14. Env-Wq 1702.06 defines “benthic deposit” as “any sludge, sediment, or other organic or inorganic accumulations on the bottom of the surface water.”
- C-15. Env-Wq 1702.07 defines “best management practices” as “those practices that are determined, after problem assessment and examination of all alternative practices and technological, economic and institutional considerations, to be the most effective practicable means of preventing or reducing the amount of pollution generated by point or nonpoint sources to a level compatible with water quality goals.”
- C-16. Env-Wq 1702.08 defines “biological integrity” as “the ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.”
- C-17. Env-Wq 1702.15 defines “cultural eutrophication” as “the human-induced addition of wastes that contain nutrients to surface waters, resulting in excessive plant growth or a decrease in dissolved oxygen, or both.”
- C-18. Env-Wq 1702.17 defines “designated uses” as “those uses specified in water quality standards for each water body or segment whether or not such uses are presently occurring. The term includes the following:
- (a) Swimming and other recreation in and on the water, meaning the surface water is suitable for swimming, wading, boating of all types, fishing, surfing, and similar activities;
 - (b) Fish consumption, meaning the surface water can support a population of fish free from toxicants and pathogens that could pose a human health risk to consumers;
 - (c) Shellfish consumption, meaning the tidal surface water can support a population of shellfish free from toxicants and pathogens that could pose a human health risk to consumers;
 - (d) Aquatic life integrity, meaning the surface water can support aquatic life, including a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of the region;
 - (e) Wildlife, meaning the surface water can provide habitat capable of supporting any life stage or activity of undomesticated fauna on a regular or periodic basis; and

(f) Potential drinking water supply, meaning the surface water could be suitable for human intake and meet state and federal drinking water requirements after adequate treatment.”

- C-19. Env-Wq 1702.18 defines “discharge” as
“(a) The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently or otherwise; or
(b) The placing of a pollutant in a location where the pollutant is likely to enter surface waters.”
- C-20. Env-Wq 1702.22 defines “existing uses” as “those uses, other than assimilation waste transport, that actually occurred in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards.”
- C-21. Env-Wq 1702.26 defines “mixing zone” as “a defined area or volume of the surface water surrounding or adjacent to a wastewater discharge where the surface water, as a result of the discharge, might not meet all applicable water quality standards.”
- C-22. Env-Wq 1702.33 defines “nuisance species” as “any species of flora or fauna living in or near the water whose noxious characteristics or presence in sufficient number or mass prevent or interfere with a designated use of those surface waters.”
- C-23. Env-Wq 1702.37 defines “point source” as “a discernible, confined, and discrete conveyance from which pollutants are or might be discharged, excluding return flows from irrigated agriculture or agricultural stormwater runoff. The term includes, but is not limited to, a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft.”
- C-24. Env-Wq 1702.38 defines “pollutant” as “‘pollutant’ as defined in 40 CFR 122.2.” 40 CFR 122.2 defines “pollutant” as “dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. It does not mean:
(a) Sewage from vessels; or
(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well [that is] used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.
NOTE: Radioactive materials covered by the Atomic Energy Act are those encompassed in its definition of source, byproduct, or special nuclear materials. Examples of materials not covered include radium and accelerator-produced isotopes. See *Train v. Colorado Public Interest Research Group, Inc.*, 426 U.S. 1 (1976).”
- C-25. Env-Wq, 1703.01, titled “Water Use Classifications; Designated Uses”, states:
“(a) All surface waters shall be classified as provided in RSA 485-A:8, based on the standards established therein for class A and class B waters. Each classification shall identify the most sensitive use it is intended to protect.
(b) All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and

biological integrity of surface waters.

(c) All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters.

(d) Unless high or low flows are caused by naturally-occurring conditions, surface water quantity shall be maintained at levels that protect existing uses and designated uses.”

C-26. Env-Wq 1703.03, titled “General Water Quality”, states in part:

“(a) The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination. [...]

(c) Unless otherwise specifically allowed by a statute, rule, order, or permit, the following physical, chemical, and biological criteria shall apply to all surface waters:

(1) All surface waters shall be free from substances in kind or quantity that:

- a. Settle to form harmful benthic deposits;
- b. Float as foam, debris, scum or other visible substances;
- c. Produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses;
- d. Result in the dominance of nuisance species; or
- e. Interfere with recreational activities. [...]

C-27. Env-Wq 1703.06 includes water quality criteria for bacteria.

C-28. Env-Wq 1703.07, titled “Dissolved Oxygen”, includes the following:

“(a) Class A waters shall have a dissolved oxygen content of at least 75% saturation, based on a daily average, and an instantaneous minimum of at least 6 mg/l [milligrams per liter] at any place or time except as naturally occurs.

(b) Except as naturally occurs and subject to (c) and (e), below, class B waters shall have a dissolved oxygen content of:

- (1) At least 75% of saturation, as specified in RSA 485-A:8, II, based on a daily average; and
- (2) An instantaneous minimum dissolved oxygen concentration of at least 5 mg/l.

(c) In areas identified by the New Hampshire fish and game department (NHF&G) as cold water fish spawning areas of species whose early life stages are buried in the gravel on the bed of the surface water, the 7 day mean dissolved oxygen concentration shall be at least 9.5 mg/l and the instantaneous minimum dissolved oxygen concentration shall be at least 8 mg/l for the period from October 1 of one year to May 14 of the next year, provided that the time period shall be extended to June 30 for a specific discharge to a specific waterbody if modeling done in consultation with the NHF&G determines the extended period is necessary to protect spring spawners or late hatches of fall spawners, or both.

(d) Unless naturally occurring or subject to (a), above, surface waters within the top 25 percent of depth of thermally unstratified lakes, ponds, impoundments, and reservoirs or within the epilimnion shall contain a dissolved oxygen content of at least 75 percent saturation, based on a daily average and an instantaneous minimum dissolved oxygen content of at least 5 mg/l. Unless naturally occurring, the dissolved oxygen content below those depths shall be consistent with that necessary to maintain and protect existing and designated uses.

(e) As specified in RSA 485-A:8, III, waters in a temporary partial use area established under RSA 485-A:8, II as a surface water that is receiving a combined sewer overflow discharge shall contain not less than 5 parts per million of dissolved oxygen for the duration of the discharge and up to 3 days following cessation of the discharge.”

C-29. Env-Wq 1703.08, titled “Benthic Deposits”, states:

“(a) Class A waters shall contain no benthic deposits, unless naturally occurring.

(b) Class B waters shall contain no benthic deposits that have a detrimental impact on the benthic community, unless naturally occurring.”

- C-30. Env-Wq, 1703.09, 1703.10 and 1703.12 include water quality criteria for oil and grease, color and slicks, odors, and surface floating solids, respectively.
- C-31. Env-Wq 1703.11, titled “Turbidity”, states:
“(a) Class A waters shall contain no turbidity, unless naturally occurring.
(b) Class B waters shall not exceed naturally occurring conditions by more than 10 NTUs.
(c) Turbidity in waters identified in RSA 485-A:8, III shall comply with the applicable long-term combined sewer overflow plan prepared in accordance with Env-Wq 1703.05(c).
(d) For purposes of state enforcement actions, if a discharge causes or contributes to an increase in turbidity of 10 NTUs or more above the turbidity of the receiving water upstream of the discharge or otherwise outside of the visible discharge, a violation of the turbidity standard shall be deemed to have occurred.”
- C-32. Env-Wq 1703.13, titled “Temperature”, states:
“(a) There shall be no change in temperature in class A waters, unless naturally occurring.
(b) Temperature in class B waters shall be in accordance with RSA 485-A:8, II, and VIII.”

For class B waters, NH RSA-A:8, II states: “Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class.”

NH RSA-A:8, VIII states: “In prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire fish and game department, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control.”

- C-33. Env-Wq 1703.14, titled “Nutrients”, states:
“(a) Class A waters shall contain no phosphorous or nitrogen unless naturally occurring.
(b) Class B waters shall contain no phosphorous or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.
(c) Existing discharges containing either phosphorous or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards.
(d) There shall be no new or increased discharge of phosphorous into lakes or ponds.
(e) There shall be no new or increased discharge(s) containing phosphorous or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds.”
- C-34. Nutrient Numeric Thresholds: New Hampshire does not currently have numeric surface water quality criteria for nutrients (total phosphorus and total nitrogen) in rule (i.e., Env-Wq 1700) but has established numeric thresholds for nutrient response parameters such as chlorophyll-a that are used for surface water quality assessments. These numeric thresholds are included in New Hampshire’s Consolidated Assessment and Listing Methodology or CALM⁴. The CALM states the following regarding the numeric

⁴ State of New Hampshire 2020/2022 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. New

chlorophyll-a threshold established to protect the recreation designated use: “Excessive algal growth (high biomass and high chlorophyll-a values) can impair the public safety and aesthetic enjoyment of surface waters. The General Water Quality Criteria (Env-Wq 1703.03) require that surface waters be free of substances which: produce color or turbidity making the water unsuitable for the designated use or interfere with recreational activities (Env-Wq 1703.03 (c)(1) c & e). For assessment purposes, chlorophyll-a concentrations in excess of 15 µg/L in fresh water and 20 µg/L in salt water are indicators of excessive algal growth that interferes with recreational activities.”

C-35. Env-Wq 1703.18, titled “pH”, states:

“(a) The pH of Class A waters shall be as naturally occurs.

(b) As specified in RSA 485-A:8, II, the pH of Class B waters shall be 6.5 to 8.0, unless due to natural causes.

(c) As specified in RSA 485-A:8, III, the pH of waters in temporary partial use areas shall be 6.0 to 9.0 unless due to natural causes.”

C-36. Env-Wq 1703.19, titled “Biological and Aquatic Community Integrity”, states:

“(a) All surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.

(b) Differences from naturally-occurring conditions shall be limited to non-detrimental differences in community structure and function.”

C-37. Env-Wq 1703.21, titled “Water Quality Criteria for Toxic Substances”, states in part:

“(a) Unless naturally occurring or allowed under part Env-Wq 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that:

(1) Injure or are inimical to plants, animals, humans or aquatic life; or

(2) Persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in:

a. Edible portions of fish, shellfish, or other aquatic life; or

b. Wildlife that might consume aquatic life. [...]”

C-38. Env-Wq 1705.01, titled “Assimilative Capacity”, under Part Env-Wq 1705, titled “Flow Standards”, states in part:

“(a) [...] the department shall hold not less than 10 percent of the assimilative capacity of each surface water in reserve to provide for future needs.

C-39. Antidegradation provisions are included in Env-Wq 1702 and Env-Wq 1708.

a. Env-Wq 1702.03 defines “antidegradation” as “a provision of the water quality standards that maintains and protects existing water quality and uses.”

b. Env-Wq 1708.02 states: “Antidegradation shall apply to: (a) Any proposed new or increased activity, including point source and nonpoint source discharges of pollutants, that would lower water quality or adversely affect the existing or designated uses; (b) Any proposed increase in loadings to a waterbody when the proposal is associated with existing activities; (c) Any increase in flow alteration over an existing alteration; and (d) Any hydrologic modifications, such as dam construction and water withdrawals.”

c. Antidegradation applies to all parameters as evidenced by Env-Wq 1708.08(a) under “Assessing Waterbodies”, which states: “The applicant shall characterize the existing water quality and determine if there is remaining assimilative capacity for each parameter in

question.”

- d. Env-Wq 1708.03(a) states: “A proposed discharge or activity shall not eliminate any existing uses or the water quality needed to maintain and protect those uses.”
- e. Env-Wq 1702.04 defines “assimilative capacity” as “the amount of a pollutant or combination of pollutants that can safely be released to a waterbody without causing violations of applicable water quality criteria or negatively impacting uses.”
- f. Env-Wq 1708.08 describes the process for assessing waterbodies to determine if there is remaining assimilative capacity for each parameter in question, including the requirement under Env-Wq 1708.08(h) for the department to reserve no less than 10% of a surface water’s assimilative capacity as specified under Env-Wq 1705.01 (see Fact C-38).
- g. Env-Wq 1708.09, titled “Significant or Insignificant Determination”, states in part: “(a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality. (b) The department shall not approve a discharge or activity that will cause a significant lowering of water quality unless the applicant demonstrates, in accordance with Env-Wq 1708.10, that the proposed lowering of water quality is necessary to achieve important economic or social development in the area where the waterbody is located. (c) [...] any applicant proposing an activity that will cause an insignificant lowering of water quality shall not be required to demonstrate that the activity is necessary to provide important economic or social development, provided the applicant implements best management practices to minimize degradation.”
- h. Env-Wq 1708.01(b)(1), in general, states that for significant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions and the analysis required by Env-Wq 1708.10, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface waters are located. In allowing such degradation or lower water quality, the department shall ensure water quality adequate to fully protect existing uses. Further, the department shall ensure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented.
- i. Env-Wq 1708.01(b)(2) states: “The department shall not approve any proposed discharge or activity that might cause degradation or lower water quality, without such conditions as are necessary to ensure that: a. Water quality will be adequate to protect existing uses; b. The highest statutory and regulatory requirements will be achieved for all new and existing point sources; and c. All cost effective and reasonable best management practices for nonpoint source control will be implemented.”

C-40. Env-Wq 1708.04, titled “Protection of Water Quality in ORW”, states:

“(a) Surface waters of national forests and surface waters designated as natural under RSA 483:7-a, I, shall be considered outstanding resource waters (ORW).

(b) Subject to (c), below, water quality shall be maintained and protected in surface waters that constitute ORW.

(c) The department shall allow a limited point or nonpoint source discharge to an ORW only if:

- (1) The discharge will result in no more than temporary and short-term changes in water quality, wherein “temporary and short-term” means that degradation is limited to the shortest possible time;
- (2) The discharge will not permanently degrade water quality or result at any time in water

- quality lower than that necessary to protect the existing and designated uses in the ORW;
and
(3) All practical means of minimizing water quality degradation are implemented.”

- C-41. Env-Wq 1708.05, titled “Protection of Class A Waters”, states:
“(a) As specified in RSA 485-A:8, I, discharges of sewage or waste to class A waters shall be prohibited.
(b) Proposed new or increased activities that the department determines do not involve the discharge of sewage or waste shall be reviewed in accordance with this part.”
- C-42. Env-Wq 1708.06 titled “Protection of Water Quality in High Quality Waters” states the following:
“(a) Subject to (b) through (d) below, high quality waters shall be maintained and protected.
(b) The department shall evaluate and authorize insignificant changes in water quality as specified in Env-Wq 1708.09.
(c) The department shall allow degradation of significant increments of water quality, as determined in accordance with Env-Wq 1708.09, in high quality waters only if the applicant can demonstrate to the department, in accordance with Env-Wq 1708.10, that allowing the water quality degradation is necessary to accommodate important economic or social development in the area in which the receiving water is located.
(d) If the waterbody is Class A Water, the requirements of Env-Wq 1708.05 shall also apply.”
- C-43. Env-Wq 1708.12(a) states that ““transfer” means the intentional conveyance of water from one surface water to another surface water for the purpose of increasing volume of water available for withdrawal from the receiving surface water. The term does not include the transfer of stormwater, for the purpose of managing stormwater during construction, between basins created or otherwise lawfully used for stormwater detention or treatment, or both, and does not include the discharge of stormwater from a detention or treatment basin to a surface water.”
- C-44. The Mad River in the vicinity of the Project is Class B under New Hampshire Chapter Laws 1949, 199:1, XXVI and 1967, 147:15.

New Hampshire Water Use Registration and Reporting Program

- C-45. NH RSA 488 established the New Hampshire Water Use Registration and Reporting Program (WURRP) within NHDES, and NH RSA 488:1 states: “Statement of Purpose. – This chapter provides for uniform statewide collection of water use data to understand how water resources are utilized in the state by establishing procedures and standards for the registration, measurement, and reporting of water use. The legislature recognizes the fundamental importance of water resources and intends to provide a framework to obtain and maintain basic water use data for the state. The legislature recognizes that information describing the major water uses of the state along with assessing the amount of water in a given watershed or aquifer are integral to all water resource quantity assessments and management decisions. Water use data is necessary to understand the effects of cumulative uses, transfers, discharges, and consumptive water losses in aquifers and watersheds in the state. Water use data also identifies the quantity and timing of existing water uses, and this information can be used to estimate future water needs of the state. Water use data is also necessary for verifying compliance with and equitable enforcement of state laws pertaining to groundwater and surface water.”
- C-46. NH RSA 488:3, states: “I. No person shall withdraw or discharge a cumulative amount of more than 20,000 gallons of water per day, averaged over any 7-day period, or more than 600,000 gallons of water

over any 30-day period, at a single real property or place of business without registering the withdrawal or discharge with the department. Transfers of such volume of water shall also be registered. Registration shall be in addition to any required permits. II. No registration shall be transferred to another person without written notification to the commissioner.”

- C-47. Env-Wq 2102 includes requirements for water use registration and reporting and applies to any person required to register a water use under NH RSA 488:3, I, namely any person whose cumulative incoming water or cumulative outgoing water exceeds an average of 20,000 gallons of water per day in any 7-day period, or exceeds a total volume of 600,000 gallons in any 30-day period (see Fact C-46). Env-Wq 2102.07 requires each water user that is not an agriculture water user, a limited water user, or the owner of a mobile facility that qualifies for an intermittent registration under Env-Wq 2102.32(a)(1) to report water use in accordance with Env-Wq 2102.07.
- C-48. The Applicant is required to register and report water use of the Project with the NHDES WURRP because the Project’s cumulative incoming water or cumulative outgoing water exceeds an average of 20,000 gallons of water per day in any 7-day period, or exceeds a total volume of 600,000 gallons in any 30-day period.
- C-49. Records maintained by the NHDES WURRP show that the Applicant is a registered water user and water use of the Project has been reported since 1988.

New Hampshire Water Conservation Program

- C-50. NH RSA 485:61, titled “Rules for Water Conservation”, states the following regarding rules for NHDES’ Water Conservation Program:

- I. The department shall adopt rules, pursuant to RSA 541-A, for water conservation practices for water users. These rules shall strike a reasonable balance between environmental, energy, and economic impacts and be consistent with current industry standards and practices for different types of water users.
- II. The water conservation rules in paragraph I of this section shall apply to all new permit applicants and applications for water withdrawals subject to the provisions of RSA 485:3, RSA 485:48, RSA 485-C:21 and section 401 of the Clean Water Act.
- III. Water conservation rules shall be consistent with applicable state or federal rules and regulations.”

Water Conservation Rules were adopted May 14, 2005 and currently codified as Env-Wq 2101.

- C-51. Env-Wq 2101.05(f) states the following: “The owner of a conservation system that is, in whole or in part, an ICI water user shall comply with the requirements specified in Env-Wq 2101.13 and Env-Wq 2101.19 through Env-Wq 2101.22.”
- C-52. Env-Wq 2101.24, titled “Water Conservation Plan Required”, states, in relevant part, the following:
- “(a) The applicants for approval of a source that would be a conservation source shall submit a water conservation plan that demonstrates compliance with the applicable provisions of Env-Wq 2101.05 through Env-Wq 2101.22 in accordance with the following:”

“(5) For a new withdrawal from a surface water associated with a project requiring a 401

Water Quality Certification, the water conservation plan shall be submitted prior to or in conjunction with the application for a 401 Water Quality Certification pursuant to Section 401 of the federal Clean Water Act;”.

- C-53. Env-Wq 2101.23, titled “Waivers”, allows NHDES to grant waivers of certain provisions in Env-Wq 2101 provided, the person requesting the waiver submits a written request to NHDES that includes the information specified in Env-Wq 2101.23(d).
- C-54. On August 31, 2022, the Applicant submitted a request to NHDES to waive the requirements of Env-Wq 2101.05(f) and Env-Wq 2101.24(a)(5) (see Facts C-51 through C-53) for the Project. On September 13, 2022, the NHDES Water Conservation Program approved the waiver request in accordance with Env-Wq 2101.23 with the following conditions: “[...]the waiver shall be valid for no more than four years from the date of this approval. Prior to the expiration of the waiver, the same waiver may be requested in order to be considered an extension of the original waiver approval.”

CWA Section 303(d) List, TMDLs, and Requirements for Impaired Waters

- C-55. Section 303(d) of the Clean Water Act (33 U.S.C. 1313(d)) and the regulations promulgated thereunder (40 C.F.R. 130.0 – 40 C.F.R. 130.11) require states to identify and list surface waters that are violating state water quality standards (i.e., Section 303(d) List) that do not have an approved Total Maximum Daily Load (TMDL) for the pollutants causing impairment. For these water quality-impaired waters, states must establish TMDLs for the pollutants causing the impairments and submit the list of impaired surface waters and TMDLs to the U.S. Environmental Protection Agency (EPA) for approval. TMDLs include source identification, determination of the allowable load and pollutant reductions (by source) necessary to meet the allowable load. Once a TMDL is conducted, the pollutant/surface water is transferred to the list of impaired waters with approved TMDLs (known as Category 4A waters). The Section 303(d) List is, therefore, a subset of all impaired waters. The most recent Section 303(d) list of impaired waters submitted to EPA is the [2020/2022 Section 303\(d\) List](#). A list of all impaired waters is available through the [NHDES website](#).
- C-56. On December 20, 2007, EPA approved the [Northeast Regional Mercury TMDL](#) which addressed mercury impairments in all New Hampshire fresh surface waters. Surface waters within the boundary of the Project are subject to this TMDL.
- C-57. On September 21, 2010, EPA approved the [Statewide Bacteria TMDL](#) for 394 surface waters listed as impaired on the 2008 303(d) List of impaired waters. Surface waters within the boundary of the Project are not subject to this TMDL.
- C-58. When a surface water does not meet Surface Water Quality Standards (i.e., when it is impaired), Env-Wq 1703.01 (b) (see Fact C-25) states that “All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters.” Further, the addition of pollutants causing or contributing to impairment should be avoided as indicated in the following regulation and statute:
- Env-Wq 1703.03 (a) (see Fact C-26) states that “The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination.”

NH RSA 485-A:12, I (Enforcement of Classification) states that “After adoption of a given classification for a stream, lake, pond, tidal water, or section of such water, the department shall enforce such classification by appropriate action in the courts of the state, and it shall be unlawful for any person or persons to dispose of any sewage, industrial, or other wastes, either alone or in conjunction with any other person or persons, in such a manner as will lower the quality of the waters of the stream, lake, pond, tidal water, or section of such water below the minimum requirements of the adopted classification.”

Section 401 Water Quality Certification Application and Other Relevant Information

- C-59. On November 3, 2020, pursuant to 18 CFR §4.61, the Applicant filed with FERC an Application for a Subsequent License for Minor Water Power Project for the Campton Hydroelectric Project, FERC No. 3253 (also referred to herein as the Final License Application or FLA).⁵ The Applicant filed with FERC updated versions of the FLA on April 5, 2021 and May 13, 2021.⁶ On February 7, 2022, the Applicant filed with FERC a proposed amendment to the FLA to change the make and model of the turbine it originally proposed in the FLA to replace one of the turbines of the Project.⁷ The change would increase the electrical generating capacity of the Project by 127 kilowatts (kW), which is 23 kW more than the 104 kW increase originally proposed in the FLA.
- C-60. On September 2, 2021, the U.S. Department of Interior (USDI) through the U.S. Fish and Wildlife Service (USFWS) filed a letter with FERC to provide comments, recommendations, and prescriptions for the Project to prevent loss of, or damage to, fish and wildlife resources.⁸ The USFWS letter was in response to FERC’s Ready for Environmental Analysis that FERC issued on July 7, 2021 for relicensing proceedings for the Project.⁹ The letter includes, among other things, the USFWS’ recommendations under section 10(j) of the Federal Power Act, as amended, (16 U.S.C. 791a-828c) (FPA) and the USFWS’ preliminary fishway prescriptions in accordance with the section 18 of the FPA.^{10,11} On August 10, 2022, FERC issued a letter to USDI and USFWS explaining that FERC did not recommend adoption of certain recommendations that USFWS provided in its September 2, 2021 in the Environmental Assessment for Hydropower License that FERC issued for the Project on August 10, 2022 (see Fact C-65).¹²

⁵ FERC Document Accession No. 20201103-5024

⁶ FERC Document Accession Nos. 20210405-5784 (April 5, 2021 updated FLA) and 20210513-5050 (May 13, 2021 updated FLA)

⁷ FERC Document Accession No. 20220207-5282

⁸ FERC Document Accession No. 20210902-5051 (USFWS letter with comments, recommendations, and prescriptions for the Project)

⁹ FERC Document Accession No. 20210707-3066 (FERC Notice of Application Accepted for Filing and Ready for Environmental Analysis)

¹⁰ Section 10(j) of the FPA requires FERC to consider federal and state fish and wildlife agency recommendations pursuant to the Fish and Wildlife Coordination Act to protect, mitigate damages to, and enhance fish and wildlife resources. “That in order to adequately and equitably protect, mitigate damages to, and enhance, fish and wildlife (including related spawning grounds and habitat) affected by the development, operation, and management of the project, each license issued under this Part shall include conditions for such protection, mitigation, and enhancement. Subject to paragraph (2), such conditions shall be based on recommendations received pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) from the National Marine Fisheries Service, the United States Fish and Wildlife Service, and State fish and wildlife agencies”. FERC can alter or reject Section 10(j) recommendations by following prescribed procedures in Section 10(j)(2).

¹¹ Section 18 of the FPA authorizes the USFWS or NMFS to prescribe upstream and downstream fishway passage requirements. “The Commission shall require the construction, maintenance, and operation by a licensee at its own expense of such lights and signals as may be directed by the Secretary of the Department in which the Coast Guard is operating, and such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate”. Section 18 fishway prescriptions are mandatory; FERC cannot alter them.

¹² FERC Document Accession No. 20220810-3057 (FERC Environmental Assessment for Hydropower License)

- C-61. On September 7, 2021, the New Hampshire Fish and Game Department (NHFGD) filed a letter with FERC to respond to FERC’s Notice of Application Accepted for Filing and Ready for Environmental Analysis that FERC filed on July 7, 2021 for relicensing proceedings for the Project.^{13,9}
- C-62. On October 8, 2021, NHDES received from the Applicant an application for a CWA Section 401 water quality certification (WQC) for the Project (certification application or certification request). The record for this certification decision includes the information provided in the certification application as well as information filed with FERC for this relicensing through September 1, 2022.
- C-63. On November 4, 2021, FERC issued a “Notice of Waiver Period for Water Quality Certification Application” which stated that if NHDES did not act on the certification application by October 8, 2022, NHDES’ certifying authority would be deemed waived pursuant to section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1)¹⁴.
- C-64. On June 15, 2022, FERC filed a memo that summarized a conversation that FERC staff had with the Applicant on June 15, 2022 about the Applicant’s use of a low-level outlet gate located in the dam of the Project. In the memo, FERC stated, among other things, the following: “[...] the only purpose for opening the gate would be to release sediment that has built up in Campton Pond. [The Applicant] stated that [it] monitors sediment levels in Campton Pond, particularly after storm events, and that [the Applicant] proposes to release sediment through the outlet gate to maintain a deep pool upstream of the dam, as needed during the term of any subsequent license [and] that any such releases would be rare.”
- C-65. On August 10, 2022, FERC prepared and filed an “Environmental Assessment for Hydropower License” for the Project in accordance with the National Environmental Policy Act of 1969 and FERC’s regulations under 18 CFR Part 380 to assess the environmental and economic effects associated with the Project and alternatives to the proposed Project.¹² On September 1, 2022, USFWS filed with FERC a letter to provide comments on FERC’s environmental assessment.¹⁵
- C-66. Natural Resource Agencies include, but are not limited to, NHDES, NHFGD, USFWS, and the Forest Service as defined in footnote 16.
- C-67. NHDES posted a draft version of this certification for public comment from September 2, 2022 to 4 p.m. on October 3, 2022. NHDES did not receive comments on the draft certification.

D. FINDINGS

- D-1. The Applicant submitted an Application to FERC for a Subsequent License for Minor Water Power Project for the Project (also referred to herein as the Final License Application or FLA) (see Fact C-59).
- D-2. The Applicant submitted a request to NHDES for a water quality certification for the Project required

¹³ FERC Document Accession No. 20210907-5173 (NHFGD comment letter)

¹⁴ FERC Document Accession No. 20211104-3052

¹⁵ FERC Document Accession No. 20220901-5013

¹⁶ NHDES means New Hampshire Department of Environmental Services; NHFGD means New Hampshire Fish and Game Department; USFWS means United States Fish and Wildlife Service of the US Department of Interior; the Forest Service means the United States Department of Agriculture Forest Service.

under section 401 of the CWA and NH RSA 485-A:12, III (see Facts C-1, C-8, and C-62).

Existing and Proposed Project Facilities and Operation

- D-3. *Background:* The Project is located on the Mad River in Grafton County, New Hampshire. The infrastructure of the Project is located within the Town of Campton, New Hampshire. The Project dam, known as the Campton Dam, is owned by the Forest Service, has been at its location since 1935, is located 2.5 miles upstream of the Mad River's confluence with the Pemigewasset River, and is the only hydropower dam on the Mad River. The Forest Service leases the dam to the Applicant under a Special Use Permit. The Campton Dam creates an impoundment upstream of the dam, known as Campton Pond, that is managed by the Forest Service and has a surface area of approximately 37 acres and gross storage capacity of 74 acre-feet at normal pond elevation of 644 feet National Geodetic Vertical Datum of 1929 (NGVD29), which includes approximately 2 inches of spill over the dam. At the Project dam, the total drainage area of the Mad River is approximately 58 square miles, which is about 93.5 percent of the Mad River watershed, which is approximately 62 square miles. The Mad River has its headwaters in Greely Ponds in the unincorporated Township of Livemore, New Hampshire, and flows approximately 18 miles generally southwest through the towns of Waterville Valley, Thornton, and Campton until it joins with the Pemigewasset River in the Town of Campton.
- D-4. *Existing Project Facilities and Operations:* The Applicant provided the following descriptions of the existing facilities and operations of the Project in portions of the Final License Application as updated and amended (see Fact C-59):

"The Campton Project consists of an intake structure, penstock, and three-unit powerhouse with a total nameplate capacity of 639 kW. The project operates as an automated run-of-river facility. [...] The intake facility is located on the southeastern side of the impoundment a short distance upstream from the Dam. A 78-inch steel penstock runs 600 feet downstream to the powerhouse, where it trifurcates to feed each turbine. A 20-inch smolt bypass facility empties into a plunge pool on the eastern ledge just below the dam. The smolt bypass structure is a holdover from when the Mad River was being considered as part of an Atlantic salmon recovery program for the Merrimack River watershed, managed by the [USFWS]. The USFWS, however, ended the 30-year recovery program and stopped stocking Atlantic salmon in the Merrimack River watershed in 2013 due to budgetary concerns and low salmon returns.

The Campton Dam is located on the southern end of Campton Pond in Campton, NH, at the intersection of NH Route 49 and NH Route 175. The project is near the town of Campton and the White Mountain National Forest occupies the land above the project. The White Mountain National Forest surrounds the impoundment area, but the Powerhouse is located south of the White Mountain National Forest boundary. The project boundary area includes the impoundment, the powerhouse, and the short transmission line to the project interconnection point. [...]

The Campton Dam is a reinforced concrete gravity dam approximately 341 feet long, with a maximum structural height of 39 feet above the foundation. The spillway ogee section is 151 feet long. It contains a 36" diameter mud gate which is used to drain the pond as required. This dam was constructed in 1935 by the Civilian Conservation Corps for recreational purposes, replacing a timber crib structure owned and operated by the Dole family in the 1800's. [...]

The spillway freeboard is 8'-7" to 8'-11." Freeboard is the distance from the spillway crest to the top of the dam abutments. The ogee type spillway is 151 feet long and 39 feet high. [...]

The impoundment is shallow, with a mean depth of just 2 feet and a maximum depth of 8 feet and serves as valuable pond and wetland wildlife habitat for waterfowl and wading birds, fish, and reptiles and amphibians. The pond and its associated wetlands also represent a unique assemblage of ecologically important natural communities and plant habitats. The limited depth means that there is no effective storage capacity within Campton Pond and therefore it is operated as run of river. The impoundment is used for recreation such as hunting, fishing, bird watching, nature study, wildlife photography, canoeing, and kayaking. [...]

The intake facility is located on the southeastern side of the impoundment approximately 60 feet upstream from the Dam. The land rights are established through the special use permit given to [the Applicant] by the U.S. Forest Service [...]. The intake reinforced concrete substructure is approximately 47 feet long, 22 feet wide, and 24 feet high. The intake has a timber superstructure. The intake includes an ice barrier with stoplogs, a forebay with two bays divided by trash racks between the smolt bypass and 78-inch penstock, stoplog slots upstream of the smolt bypass and 78-inch penstock, and an aluminum slide gate (6 feet 7 inches by 7 feet), with a hydraulic operator, to control flow through the 78-inch penstock. The trash racks have both horizontal and vertical bars to prevent fish entrainment and are in removable sections totaling approximately 25 feet in length. The trash racks are approximately 13 feet in height and the clear spacing between the vertical bars is 1.75 inches. The 78-inch steel penstock runs 600 feet downstream to the powerhouse, where it trifurcates to feed each turbine. The penstock trifurcations for Units 1, 2, and 3 are all 48 inches in diameter, ¼ inches thick and 30, 20, and 43 feet in length, respectively. A 20-inch smolt bypass facility empties 85 feet downstream of the intake structure into a plunge pool on the eastern ledge just below the dam. [...]

The powerhouse is located on the east bank of the Mad River. The building is approximately 43 feet long and 30 feet wide. The original building was constructed in 1924. An addition holding the electronics and power control equipment was constructed in conjunction with the rest of the project in 1982. The site was fitted with three turbines. The two submersible Flygt units sit behind a retaining wall outside the powerhouse and a Rodney Hunt turbine is in the powerhouse basement. All three units discharge into the tailrace.[...]

There are currently three hydraulic turbines at the Campton Hydro Project. Unit 1 and 2 are Flygt Model 7570 submersible 5-blade turbine-generator units each rated with a capacity of 236 kW and minimum/maximum flow of 74/89 cfs [cubic feet per second]. Unit 3 is a Rodney Hunt Francis type 80 turbine with a Westinghouse Generator rated at 167 kW and a minimum/maximum flow of 23/60 cfs. The Flygt Units were new in 1984. All of the units run, but unit one has had increasing problems with age. [...]

The Campton Hydro Project is operated as a run-of-river facility according to the prescribed flow regime. The limited storage available in the impoundment eliminates the possibility of any method of operation other than run-of-river. The flow regime under the current license issued to Mad River Power Associates on November 9, 1982 is explained in Article 24:^[17]

‘Licensee shall, for the protection and enhancement of aquatic resources in the Mad River, discharge from the Campton Dam a continuous minimum flow according to the following schedule:

- a) During periods of non-generation, or if inflow to the project is less than 25 cfs, inflow to

¹⁷ FERC Document Accession No. 19821112-0103

the project shall be discharged over the spillway;
b) During periods of generation, or if inflow to the project is greater than 25 cfs, 4.5 cfs shall be discharged through the Atlantic salmon smolt bypass facility.

Licensee shall also operate the smolt bypass facility from mid-April to mid-June, or at other periods of downstream smolt migration when requested by [USFWS] and [NHFGD]. These flows may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods for fishery management purposes upon mutual agreement between the Licensee and [NHFGD].’ [...]

Within the bypass reach there are five distinct sub-reaches, based on substrate and flow conditions, extending from the toe of the dam to the tailrace. The bypass reach, depending on how it is measured, is approximately 900 feet long.^[18]”

FERC provided the following description of the existing Project, among other descriptions of the Project, in the environmental assessment that it filed on August 10, 2022 (see Fact C-65):

“The project creates an approximately 600-foot-long bypassed reach.^[18] [...]

“The May 15, 1985 Forest Service Special Use Permit for the Campton Hydroelectric Project (Special Use Permit) includes an Operation and Maintenance Plan which the following requirements: (1) do not lower the elevation of Campton Pond by more than 3 inches below the normal water surface elevation of 644 feet; and (2) release a minimum flow of 4.5 [cfs] from the smolt bypass facility to the bypassed reach.

[The Applicant] operates the project in a run-of-release mode using an automated programmable logic controller (PLC) that responds to water levels in Campton Pond.^[19] Under this mode of operation, [the Applicant] limits withdrawals and releases from Campton Pond for hydropower generation so that, combined with the Forest Service’s releases over the spillway,^[20] total outflow from Campton Pond approximates inflow to Campton Pond. To operate the turbines, [the Applicant] withdraws water from Campton Pond through the project’s intake structure and releases the water to the penstocks and the turbines. [The Applicant] then discharges the water to the project’s tailrace and the mainstem of the Mad River at the end of the bypassed reach. Both 236-kW turbine-generators have a minimum and maximum hydraulic capacity of 74 cubic feet [cfs] and 89 cfs, respectively. The 167-kW turbine-generator has a minimum and maximum hydraulic capacity of 23 cfs and 60 cfs, respectively. The minimum hydraulic capacity of the project is 23 cfs and the total maximum hydraulic capacity of the project is 238 cfs. [...]

[The Applicant] does not start generating electricity until the surface elevation of Campton Pond reaches 644.18 feet and inflow to Campton Pond is approximately 44.9 cfs. Before the project starts generating, inflow is released to the bypassed reach, including [the Applicant’s] release of 4.5 cfs through the project’s salmon smolt bypass facility and the Forest Service’s release of 40.4 cfs over

¹⁸ FERC stated in its environmental assessment for the Project that the bypassed reach is approximately 600-feet-long.

¹⁹ FERC stated the following in a footnote of its environmental assessment for the Project: “Although [the Applicant] states that it operates the project in a run-of-river mode it is more accurate to refer to the operating mode as run-of-release because [the Applicant]’s intake flows are dependent on flows made available by the Forest Service from Campton Pond.”

²⁰ FERC stated the following in a footnote of its environmental assessment for the Project: “[...] the Forest Service maintains Campton Dam in a run-of-river mode by keeping the low-level gate in a closed position and releasing water over the spillway of the dam to the Mad River.”

the Campton Dam spillway. When the project starts generating, [the Applicant] withdraws 23 cfs from Campton Pond (i.e., the minimum hydraulic capacity of the project), which diverts flow over the spillway of the dam and results in a 0.84-inch decrease in the depth of spill at the spillway (from 644.18 to 644.11 feet) and a total bypassed reach flow of 21.9 cfs (i.e., 4.5 cfs through the smolt bypass facility plus 17.4 cfs over the spillway). As inflow to Campton Pond increases above 44.9 cfs, [the Applicant] uses the automated PLC to manage withdrawals from Campton Pond to maintain a stable elevation of 644.11 feet at the spillway and a 21.9-cfs bypassed reach flow. When inflow to Campton Pond exceeds 259.9 cfs (i.e., the 238-cfs maximum hydraulic capacity of the project plus the total bypassed reach flow of 21.9 cfs), the Forest Service releases excess flow over the spillway to the bypassed reach. The average annual energy production of the project from 2007 through 2018 was 1,170 MWh [megawatt-hours].

The Operation and Maintenance Plan that is appended to the 1985 Special Use Permit states that [the Applicant] can open the low-level outlet gate at the base of the Forest Service's Campton Dam to pass sediment from Campton Pond to maintain a deep pool immediately upstream of the dam. According to the Special Use Permit, [the Applicant] can open the low-level outlet gate from July 16 through February 28, when there is more than 1 inch of water flowing over the spillway. [the Applicant] is not permitted to open the low-level gate from March 1 through July 15, without prior approval from the Forest Service. During flood conditions, the Special Use Permit requires [the Applicant] to install stoplogs in the headgate structure and shut down the project's turbines."

- D-5. *Proposed Project Facility, Normal Operations, and Enhancement Measures:* The Applicant provided the following descriptions of proposed facilities, normal operations, and enhancement measures (i.e., measures that would improve aquatic health of the Mad River) of the Project in the Final License Application as updated and amended (see Fact C-59):

"Mad River Power has installed a pond level transducer to enable the accurate management of the Campton Hydro Project according to the aforementioned specifications. Using the standard weir calculation with $C = 3.5$ and $L = 151$ feet the applicant determined that 29 cfs over the dam is equivalent to 1.73 inches (0.144 feet) of spill.

Equation 1: Standard Weir Equation

$$Q = C \times L \times H^{1.5}$$

Where:

Q = Flow (cfs)

C = The Coefficient (3.5)

L = The length of the weir (ft)

H = The height of the water over the weir (ft)

Under this scenario Mad River would start its first turbine at 2.57 inches (0.21 feet) of flow over the dam so when the minimum start flow of 23 cfs was diverted down the penstock, there would still be 29 cfs running through the bypass reach. [...]

The normal maximum surface area and normal maximum surface elevation of the existing impoundment are 37 acres and 644 feet, respectively. No modifications will be made that could change these dimensions. [...]

[The Applicant] is proposing three minor physical modifications to the Campton Hydro Project and one minor change in operation:

Physical Changes

1. Replace Unit 1 (Flygt 7570) with a new unit [see Fact C-59 for more information about the proposed replacement unit]
2. Increase the penstock vent from 12 inches to 18 inches in diameter.
3. Close the Smolt Bypass facility to facilitate more accurate measurements of flow through the bypass reach.

Operational Changes

1. Increase of minimum flow through the bypass reach.

Replacing Unit 1

[The Applicant] anticipates no significant environmental impacts from the proposed refit of Unit 1. The new unit is the same diameter as the existing machine. The work for replacement will be conducted entirely within the existing turbine housing. No permanent modifications will be made to the riverbed, the riverbank or the powerhouse to execute this replacement. The conversion will only require minor modifications to the support flange and the addition of a bottom cone to provide a smooth interface with the draft tube.

Increasing the Penstock Vent

[The Applicant] anticipates no significant environmental impacts from the proposed increase of the penstock vent from 12 inches to 18 inches. This modification was recommended by [a consultant of the Applicant] because they concluded that the existing vent size may not provide adequate air ventilation capacity for the existing penstock or the existing penstock with the proposed increased flow. As this vent already exists in an easily accessible area just below the intake structure on the penstock, very minimal site modification is expected. No permanent modifications will be made to the riverbed, the riverbank or the intake structure to execute this improvement.

The Smolt Bypass Facility

[The Applicant] is proposing to close the Smolt Bypass Facility to ensure a highly accurate measurement of flow through the bypass reach can be achieved using the pond level transducers and project automation that [the Applicant] recently installed. The smolt stocking program for which the smolt bypass facility was constructed is no longer in existence and therefore the facility currently serves no purpose. [The Applicant] is proposing to increase the minimum flow through the bypass reach and plans to divert the flow from the smolt bypass facility over the dam. Having all the flow through the bypass reach pass over the spillway reduces the variability in measurements and allows [the Applicant] to be more confident that it is abiding by the increased minimum flow requirements agreed upon with the agencies.

Change in Operations

[The Applicant] is proposing an operating regime that adheres to USFWS' Aquatic Base Flow which requires 0.5 cfm, or 29 cfs to be passed through the bypass reach. Current operations spill water at all times, but without sophisticated pond level sensors and exact flow could not be determined. The Applicant proposes to increase the minimum flow through the bypass reach to 29 cfs or instantaneous inflow, whichever is less. 29 cfs is equivalent to 1.73 inches of spill over the Campton Dam. [...] The increase in minimum flow was determined after consultation with state agencies [...] in an effort by [the Applicant] to support the marine health throughout the bypass reach. No adverse impact is expected from this change in operations. [...]

The Applicant anticipates the increased flow through the bypass reach will improve the quality of marine life in the stream and the new automation equipment will allow [the Applicant] to accurately maintain the agreed flow levels.”

As described in the memo that FERC filed for the Project on June 15, 2022, the Applicant plans to open the low-level outlet gate at the base of the Forest Service’s Campton Dam to pass sediment from Campton Pond as needed to maintain a deep pool immediately upstream of the dam in a manner that is consistent with the Operation and Maintenance Plan appended to the a Special Use Permit issued by the Forest Service for resources of the Project. [see Fact C-64].

CWA Section 401 Water Quality Certification Required

- D-6. The Mad River is waters of the United States (see Facts C-6 and C-7).
- D-7. The Mad River is surface waters of the state (see Fact C-12).
- D-8. The Project may include discharges from upstream of the Project dam to downstream of the dam including, but not limited to, through the turbines and various gates or over the dam spillway (see Fact C-5 and Findings D-4 and D-5).
- D-9. Because the Project may involve discharges, as that term is used in the CWA, to waters of the United States in New Hampshire, and because the Project requires a federal license, a section 401 of the CWA water quality certification is required from New Hampshire (see Facts C-1 and C-8, and Findings D-1, D-2, D-6 through D-8).
- D-10. NHDES is the authority (i.e., certifying authority) responsible for issuing CWA Section 401 water quality certifications in New Hampshire (see Facts C-3 and C-8).

New Hampshire Authority for Certification Conditions, Modifications and Monitoring

- D-11. RSA 485-A:12, III (Fact C-8) states the following: “Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards.” Monitoring includes, but is not limited to, the following:
 - monitoring to determine compliance with conditions in this certification;
 - on-site inspections;
 - development, submission, and implementation of monitoring plans;
 - analysis, preparation, and submittal of reports summarizing monitoring results;
 - notifying appropriate authorities in a timely manner when excursions from conditions in this certification occur; and
 - uploading monitoring data into the NHDES Environmental Database (EMD) so that is readily accessible to the public and useable by NHDES for surface water quality assessments required by section 305(b) and 303(d) of the federal Clean Water Act.

Potential Environmental Impacts of Hydroelectric Projects

- D-12. The following description of potential environmental impacts of hydroelectric projects is from a summary report of the 2010 summit meeting on Environmental Mitigation Technology for Hydropower

21.

“Although hydroelectric power plants have many advantages over other energy sources, they also have potential environmental impacts (Table 1). Most of the adverse impacts of dams are caused by habitat alterations. Reservoirs associated with large dams can inundate large areas of terrestrial and river habitat. Diverting water from the stream channel or curtailing reservoir releases in order to store water for future electrical generation can dry out streamside (riparian) vegetation. Insufficient water releases degrade habitat for fish and other aquatic organisms in the river below the dam. Water in a reservoir is stagnant compared to that in a free-flowing river. Consequently, water-borne sediments and nutrients can be trapped, resulting in the undesirable proliferation of algae and aquatic weeds (eutrophication) and a change in water quality in the reservoir and in reservoir releases. In some cases, water spilled from high dams may become supersaturated with nitrogen gas resulting in gas-bubble disease in aquatic organisms inhabiting the tailwaters. Hydropower projects can also affect aquatic organisms directly. The dam can block upstream movements of fish, which can have severe consequences for anadromous fish (e.g., salmon, steelhead, American shad), catadromous fish (e.g., American eels), or riverine fish that make seasonal migrations to spawn (e.g., sturgeon and paddlefish). Fish moving downstream may be drawn into the power plant intake flow (entrained). Entrained fish are exposed to physical stresses (pressure changes, shear, turbulence, strike) as they pass through the turbine that may cause disorientation, physiological stress, injury, or mortality.”

Potentially Affected Surface Waters and Surface Water Quality Standards

D-13. NHDES has assigned Assessment Unit (AU) identification numbers to many but not all surface waters in New Hampshire, with many surface waters divided into smaller segments based on their characteristics. AUs (where available) for surface waters located immediately upstream and downstream of the Project are shown in the table below. Because these surface waters are located closest to the Project or within the boundary of the Project, the designated uses (e.g., aquatic life integrity) in these surface waters have the most potential to be impacted by the Project. It is possible, however, that other surface waters may also be affected by the Project (e.g., flow alterations caused by the Project may also affect aquatic habitat in river reaches further downstream, and lack of adequate fish passage can impact fish communities located further upstream and downstream).

Assessment Unit ID	Description
NHLAK700010401-02-01	Campton Pond – Mad River riverine section upstream of the Project impoundment and the impoundment of the Project
NHRIV700010401-17	Mad River – Riverine section downstream of the Project dam
	Unnamed wetlands along the riverbanks of each of the assessment units, above.

D-14. Surface Water Quality Standards are summarized in Facts C-9 through C-44 and apply to all New Hampshire surface waters as defined in Fact C-12, including the surface waters identified in Finding D-13 that may be potentially affected by the Project.

²¹ Environmental Mitigation Technology for Hydropower: Summary Report on Summit Meeting Convened by Oak Ridge National Laboratory, the National Hydropower Association, and the Hydropower Research Foundation. Washington, D.C. June 2-3, 2010. [EMTSSummit4.pdf \(hydro.org\)](#)

- D-15. The potentially affected surface waters (see Finding D-13) are classified as Class B (see Fact C-44).
- D-16. The goal of Class A and B surface waters is to support the designated uses defined in Env-Wq 1702.17, which include swimming and recreation in and on the water, fish consumption, shellfish consumption (for tidal waters), aquatic life integrity, wildlife, and after adequate treatment as a water supply (see Fact C-18). Designated uses apply “...whether or not such uses are presently occurring” (Env-Wq 1702.17 – see Fact C-18).
- D-17. The Mad River and Campton Pond in the vicinity of the Project are Outstanding Resource Waters because they are surface waters of national forests; specifically the riverine section upstream of the Project impoundment and the impoundment of the Project (i.e., NHDES AUID NHLAK700010401-02-01); and in the Project’s bypass reach from the Project dam to the New Hampshire Route 175 bridge that crosses the Mad River, which is approximately 145 feet downstream of the dam. Therefore, those surface waters are subject to requirements of Env-Wq 1708.04 (see Fact C-40).

Fish Species

- D-18. The Mad River within the vicinity of the Project is not an area identified by NHFGD as cold-water fish spawning areas (see Env-Wq 1703.07(c) under Fact C-28).²²
- D-19. In the FLA (see Fact C-59), the Applicant listed the following resident and stocked fish in the Mad River and Pemigewasset River, which is downstream of the Project: Blacknose Dace (*Rhinichthys atratulus*); Brook Trout (*Salvelinus fontinalis*); Longnose Dace (*Rhinichthys cataractae*); Longnose Sucker (*Catostomus catostomus*), Rainbow Trout (*Oncorhynchus mykiss*), Common Shiner (*Notemigonus crysoleucas*); Golden Shiner (*Notemigonus crysoleucas*); and Slimy Sculpin (*Cottus Cognatus*).
- D-20. FERC provided the following description of fishery resources in the environmental assessment that it filed on August 10, 2022 (see Fact C-65):

“The Mad River supports an assemblage of coldwater and warmwater fish downstream of Campton Dam. A 2019 survey conducted by [NHFGD] documented the following species in the Mad River approximately 900 feet downstream of Campton Dam: blacknose dace, Eastern brook trout, longnose dace, longnose sucker, and rainbow trout. Approximately 2.5 miles upstream of Campton Dam, [NHFGD] documented the following species in the Mad River in 2017: blacknose dace, Eastern brook trout, longnose dace, longnose sucker, rainbow trout, and slimy sculpin. The Forest Service’s Campton Pond supports several warmwater and coldwater species that have recreational value as sport fish, including brook trout, rainbow trout, yellow perch, and chain pickerel. Brown bullhead is also found in Campton Pond.

[NHFGD] annually stocks rainbow trout and Eastern brook trout that are one to two years old in the Mad River upstream and downstream of the project in the spring and early summer. In 2020, New Hampshire FGD stocked 500 rainbow trout and 1,000 Eastern brook trout in the Mad River at Campton, New Hampshire. New Hampshire FGD also stocked a total of 3,852 Eastern brook trout and 2,110 rainbow trout in the Mad River upstream of Campton Dam. [...]

[American] eels have not been documented at the project or the Mad River, including during surveys conducted by [NHFGD] in the Mad River in 2008, 2017, and 2019. American eels have been observed in the Merrimack River Basin as far upstream as the confluence of the Pemigewasset River

²² NHDES email correspondence with NHFGD on August 22, 2022.

and the Squam River, including Squam Lake in Holderness, New Hampshire. The Squam River meets the Pemigewasset River approximately 12.4 miles downstream where the Mad River meets the Pemigewasset River.

After entering the Merrimack River from the Atlantic Ocean, eels must pass five hydropower dams on the Merrimack River and two hydropower dams and one flood control dam on the Pemigewasset River before reaching the project on the Mad River. Of these dams on the Merrimack and Pemigewasset Rivers, only the Lawrence Hydroelectric Project No. 2800 and the Amoskeag Development of the Merrimack River Project No. 1893 have upstream eel passage facilities.”

Threatened and Endangered Species

D-21. In the FLA (see Fact C-59), the Applicant stated the following regarding endangered or threatened species in the vicinity of the Project:

“The New Hampshire Natural Heritage Bureau (NHB) a division of New Hampshire Forests and Lands was consulted, soliciting state and Federal listed rare species in the vicinity of the Mad River Project. Though no rare, endangered, or threatened species were found in the Project area, there were rare species found in the vicinity downstream of the Project. [...]

Federally listed species found in Grafton County, NH include the Canada lynx, Northern long-eared bat [NELB], Dwarf wedgemussel, and Small-whorled pogonia [sic]. Within the project boundaries no occurrence of federally listed species has been noted.[...]

The Wood Turtle is not yet an endangered species in New Hampshire. However, the turtle is a species of Special Concern to the New Hampshire Fish and Game Department. [...] These turtles can be found in slow-moving streams and channels with sandy bottoms. They also like to live in floodplains, meadows, woodlands, fields, and wetlands.

The northern long-eared bat is federally listed as a threatened species under the Endangered Species Act. [...] The Campton Hydro Project does not operate in or near any caves and does not disturb the wooded areas within the project boundary thus no impact is expected by project operation or maintenance.”

D-22. In USFWS’ letter that it filed with FERC on September 7, 2021 (see Fact C-59), USFWS provided the following recommendations pursuant to Section 10(j) of the FPA:

“To avoid adverse effects on the NLEB, [USFWS] recommends the Licensee implement a time-of-year restriction of April 1 to October 31, for tree clearing activities associated with the operation or maintenance of the Project. This time-of-year restriction does not apply under public safety or other emergencies. In those instances, the Licensee shall notify [USFWS] within 2 business days of the unplanned safety/emergency action and provide details of the action and response. Planned tree removal activities may occur between April 1 and October 31; however, to ensure adverse effects to the NLEB are avoided, the Licensee must first determine the species is not present by conducting protocol-level surveys. In this circumstance, the Licensee should first consult with [USFWS] regarding appropriate survey methods and avoidance measures.

6. To protect the small whorled pogonia from project maintenance and construction activities, [USFWS] recommends the Licensee survey for small whorled pogonia prior to any ground disturbing activities. The Licensee should consult with [USFWS] regarding appropriate survey methods and

avoidance measures prior to any ground disturbing activity. If small whorled pogonia is identified and may be affected, additional consultation would be necessary, and the Licensee shall notify [USFWS] 90 days prior to implementing any ground disturbing activity that may affect the species.

7. To further ensure the protection of current and future federally listed species, [USFWS] recommends that the Licensee notify [USFWS] and [FERC] prior to conducting any activity that may affect a federally listed species in a manner not previously considered in the license. The Licensee should provide notification and request for approval at least 60 days prior to the subject activity.”

In NHFGD’s letter that it filed with FERC on September 7, 2021 for the Project, NHFGD provided the following comments, among other comments (see Fact C-61):

“Agree with the USFWS recommendation regarding the implementation of a time-of-year-cutting restriction for the protection of NLEB’s. [USFWS] recommends, when feasible, to avoid tree trimming and removal activities during the bat active season between April 1 and October 31.”

In the Environmental Assessment for Hydropower License that FERC issued on August 10, 2022,¹² FERC provided the following staff-recommended measures:

“To protect the federally threatened NLEB, avoid the removal of trees with diameters that are equal to or greater than 3 inches in diameter at breast height from April 1 through October 31;”

NHDES concurs with the USFWS’ Section 10(j) recommendations for the northern long-eared bat, small whorled pogonia, and other current and future federally listed species because it will help to minimize impacts of the Project to those species.

- D-23. Conditions E-11 through E-16 of this certification and the USFWS’s Section 10(j) recommendations are expected to provide adequate protection for all aquatic species, including, but not limited to, federal and state rare, threatened and endangered species.

Water Quality Assessments and 2018 Water Quality Study

- D-24. *Current surface water quality assessment:* According to the 2020/2022 303(d) list of impaired waters (see Fact C-55), the following surface waters in the vicinity of the proposed Project are listed as impaired. All impairments, with the exception of those highlighted in bold (which have approved TMDLs) are on the 2020/2022 303(d) list. It should be noted that the 2020/2022 303(d) list did not account for water quality monitoring conducted in 2018 for the Project (see Findings D-25 through D-31) because the Project data was not inputted into the NHDES Environmental Monitoring Database (EMD) when NHDES completed the assessment for the list.

Assessment Unit (AU)	Waterbody Name	Cause of Impairment (Designated Use Impaired)
NHLAK700010401-02-01	Campton Pond – Mad River riverine section upstream of the Project impoundment and the impoundment of the Project	Mercury (FC)

NHRIV700010401-17	Mad River – Riverine section downstream of the Project dam	Mercury (FC) Other Flow Regime Alterations (AL)*
<p>Notes: AL = Aquatic Life, PCR = Primary Recreation, SCR = Secondary Recreation, FC = Fish Consumption, SFC = Shellfish Consumption Impairments highlighted in bold have approved TMDLs. All other impairments are on the Section 303(d) List. All fresh surface waters are impaired mercury due to elevated levels of mercury in fish tissue which has resulted in statewide fish consumption advisory.</p> <p>*The cause of this impairment was determined by NHDES in 2000 when it discovered that there was very little water being released from the Project’s impoundment into the bypass reach of the Project.</p>		

When a surface water does not meet Surface Water Quality Standards (i.e., when it is impaired), the addition of pollutants causing or contributing to impairment should be avoided (see Fact C-58). As noted in the table above, all fresh surface waters in New Hampshire are impaired for mercury due to concentrations found in fish tissue which have resulted in a statewide fish consumption advisory. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL which addressed mercury impairments in all New Hampshire fresh surface waters, which included the riverine section upstream and downstream of the Project’s impoundment and the Project’s impoundment (see Fact C-56). The primary source of mercury addressed in the TMDL is atmospheric deposition from in-state and out-of-state emissions. Atmospheric deposition from in-state and out-of-state emissions of fossil fuel byproducts can also cause low pH in rain (aka, acid rain) which can contribute to pH violations in surface waters. Other pollutant sources can also impact mercury concentrations and pH in surface waters. For example, excursions of pH criteria (see Fact C-35) can also be caused by excessive algal and/or macrophyte plant growth which can lead to increases in pH due to the uptake of carbon dioxide during photosynthesis and reductions in pH at night due to respiration and the release of carbon dioxide. In 2000, NHDES discovered that there was no water was being released from the Project’s impoundment into the bypass reach of the Project. NHDES acknowledges that this impairment may not have occurred since 2000. The Applicant implemented recent changes and proposed certain changes to the Project (see Finding D-5) that will help ensure that this impairment will not reoccur. Conditions E-11, E-12, and E-13 will also help ensure this impairment will not reoccur.

- D-25. From July 30, 2018 to September 3, 2018, the Applicant conducted a 5-week water quality study that NHDES had requested. The goal of this study was to determine the effects of operation of the Project on water quality in the Mad River, both spatially and temporally, and to compare results to Surface Water Quality Standards. The objective of the study was to collect water temperature, dissolved oxygen, pH, nutrients, chlorophyll-a and/or secchi disk data in the Mad River upstream and downstream of the dam under various river flows, river temperatures, and Project operating conditions to determine the spatial and temporal effects of Project operation, in terms of flow, impoundment elevation, and power generation, on water quality and to determine compliance with Surface Water Quality Standards. The Applicant included a copy of the Project’s water quality study report in Appendix 4 of the FLA (see Fact C-59).
- D-26. During the water quality study that NHDES requested (see Fact D-25), the Applicant measured river flows weekly downstream of the confluence of the tailrace and bypass of the Project to develop the following model of the flow versus gauge height relationship at the Project:

$$\text{Estimated Discharge} = -282.94 + 249.87 * \text{Gage Height}$$

Based on this model, the Applicant reported that daily river flows estimated from July 30, 2018 to

September 3, 2018 varied from 11.91 cfs to 311.75 cfs, with a median value of 66.88 cfs. Therefore, river flows were below and above the minimum and maximum hydraulic capacities of the Project, which are 23 cfs and 238 cfs, respectively (see Fact D-4). To put the flows in perspective with regards to low flow, the 7Q10 low flow of the Mad River at the from June to October is 8.08 cfs based on Table 7 of Exhibit A of the FLA (see Fact C-59). The study therefore captured river flows that were close to the estimated 7Q10 low flow.²³ The maximum daily river flow occurred on August 22, 2018 and corresponded with a two-day period when approximately 1.4 inches of precipitation was recorded at a weather station approximately 12 miles away. The Applicant reported that daily rates of power generation at the Project from August 6, 2018 to September 3, 2018 ranged from 70 to 100 kilowatt-hours.

- D-27. Continuous (i.e., 15-minute intervals) water quality monitoring of temperature, pH, and dissolved oxygen was conducted at three locations: the free-flowing section just upstream of the impoundment (Location No. 1), deep spot within the impoundment (Location No. 2), and downstream of the tailrace (Location No. 3). The Applicant provided the following summary of the monitoring results (NHDES excludes the Applicant's references to figures and table from the Applicant's summary), among other summaries, in the water quality study report included in the FLA (see Fact C-59):

"Average water temperatures measured at each of the three sampling locations during the study using HOBO loggers were within 1 °C of one another. Minimum temperatures measured at each location were similar, ranging from 14.04 to 14.54 °C. The maximum temperature recorded at the impoundment sampling location (28.14 °C) was warmer than those recorded at the upstream (24.40 °C) and downstream (25.52 °C) sampling locations. [...]

Temperatures measured weekly at each location using a YSI probe confirmed the accuracy of the HOBO logger measurements. [...]

DO [dissolved oxygen] concentrations were greater than the state water quality standard for Class B surface waters throughout the duration of the study period for all three sample locations as measured by the HOBO loggers and YSI meter. [...]

Average, minimum, and maximum dissolved oxygen concentrations were similar among the three sampling locations, although minimum values were lowest at the impoundment sampling location. [...]

There was no apparent relationship between temperature and either estimated river flows, water depth measured in the impoundment, or power generation rates at any of the sampling locations. DO appeared to increase with greater river flows, particularly at the impoundment sampling location. DO did not appear to vary with water depth measured in the impoundment or power generation rates at any of the sampling locations.

Nearly all pH measurements were within the numeric standard set by NHDES, pH: 6.5 – 8.0 [Env-Wq 1703.18(b)]. The lone exception (pH 6.44) was collected at the upstream sampling location on 30 July 2018."

- D-28. Continuous water temperature (°C) and dissolved oxygen concentration (mg/l) measurements collected during the water quality study are summarized in the tables, below, as provided in Table 3-1 of the water quality study report. As indicated in the table for water temperature, below, the study captured periods of relatively high water temperatures, which NHDES considers to be water temperatures of 25

²³ The 7Q10 low flow is the average seven -day low flow that occurs, on average, once every ten years.

degrees Celsius (°C) or higher.

Temperature (°C)

Location	Minimum	Maximum	Average
Flowing section upstream of the impoundment (Location No. 1)	14.04	24.40	19.24
Deep spot within the impoundment (Location No. 2)	14.44	28.14	20.06
Downstream of the tailrace (Location No. 3)	14.54	25.52	20.01

Dissolved Oxygen Concentration (mg/l)

Location	Minimum	Maximum	Average
Flowing section upstream of the impoundment (Location No. 1)	7.63	10.12	8.67
Deep spot within the impoundment (Location No. 2)	6.75	10.04	8.27
Downstream of the tailrace (Location No. 3)	7.49	9.85	8.48

- D-29. Eleven samples (i.e., grab samples) to measure water temperature, dissolved oxygen, and pH (the downstream sampling location had 10 samples collected) were collected at each of the sampling locations during the study period. A summary of the results of those measurements are summarized in the tables, below, as provided in Table 3-2 of the water quality study report. As indicated in the table for water temperature, below, the study captured periods of relatively high water temperatures, which NHDES considers to be water temperatures of 25 degrees Celsius (°C) or higher.

Temperature (°C)

Location	Minimum	Maximum	Average
Flowing section upstream of the impoundment (Location No. 1)	16.3	18.9	17.7
Deep spot within the impoundment (Location No. 2)	17.9	26.1	21.3
Downstream of the tailrace (Location No. 3)	17.2	21.2	18.9

Dissolved Oxygen Concentration (mg/l)

Location	Minimum	Maximum	Average
Flowing section upstream of the impoundment (Location No. 1)	8.58	9.39	8.96
Deep spot within the impoundment (Location No. 2)	7.41	8.95	8.30
Downstream of the tailrace (Location No. 3)	8.27	8.94	8.57

Dissolved Oxygen (percent saturation)

Location	Minimum	Maximum	Average
Flowing section upstream of the impoundment (Location No. 1)	91.7	99.9	93.9
Deep spot within the impoundment (Location No. 2)	83.5	99.6	93.5
Downstream of the tailrace (Location No. 3)	87.4	98.2	92.2

pH

Location	Minimum	Maximum	Average
Flowing section upstream of the impoundment (Location No. 1)	6.44	7.22	6.97
Deep spot within the impoundment (Location No. 2)	6.51	7.19	6.73
Downstream of the tailrace (Location No. 3)	6.50	7.11	6.76

- D-30. A total of six water temperature and dissolved oxygen vertical profiles were collected during a 5-week period in the deep spot of the impoundment (Sampling Location 2-S) from August 6, 2018 to September 3, 2018. The Applicant provided the following summary of the results of vertical profile sampling (NHDES excludes the Applicant’s references to figures and table from the Applicant’s summary), among

other summaries, in the water quality study report included in the FLA (see Fact C-59):

“Temperature and DO vertical profiles in the impoundment showed no stratification four of the five days sampled as DO and temperature varied minimally with depth. When stratification was present on 9 September, DO increased with depth in the water column, whereas temperature decreased with depth in the water column.”

NHDES could not locate temperature data in the vertical profile of the impoundment for September 9, 2018 as described in the water quality study report that the Applicant included in the FLA. NHDES believes the Applicant may be referring to temperature data collected on September 3, 2018, which shows that water column in the impoundment changed by approximately than 2 °C from just below the surface to a depth of 1 meter in the impoundment.²⁴

D-31. The Applicant provided the following results of nutrient concentrations measured in waters samples collected from August 6, 2018 to September 6, 2018 in Table 3-3 of the water quality study report that was included in the FLA (see Fact C-59).

Date Sampled	Total Phosphorus (mg/l)	Nitrate/Nitrite-N (mg/l)	Total Kjeldhal Nitrogen (TKN) (mg/l)	Chlorophyll a (micrograms per liter)
8/6/2018	0.005	0.083	0.58	0.54
8/9/2018	0.018	-	-	2.1
8/13/2018	<0.01	0.094	0.81	1.4
8/16/2018	<0.01	-	-	1.4
8/20/2018	<0.01	0.079	0.91	0.7
8/23/2018	<0.002	-	-	0.7
8/27/2018	<0.01	-	-	3.3
8/30/2018	<0.01	-	-	2.7
9/3/2018	<0.002	-	-	1.1
9/6/2018	<0.01	-	-	<0.5

The Applicant provided the following summary of the results of turbidity (NHDES excludes the Applicant’s references to figures and table from the Applicant’s summary), among other summaries, in the water quality study report included in the FLA (see Fact C-59):

“The secchi disk was visible at the bottom depth at each sampling location throughout the duration of the study.”

There were no excursions of New Hampshire’s numeric chlorophyll-a threshold for recreation for freshwater (15 ug/L) specified in the NHDES CALM⁴ for recreation, indicating a relatively low response to total phosphorous and nitrogen. Total phosphorous data indicate oligotrophic conditions, as described in the CALM, in the impoundment of the Project (see Fact C-34)

D-32. At the request of NHDES, the Applicant collected additional water quality data and flow measurements in a deep section and out of the main current of the bypass reach of the Project during from July 1, 2020

²⁴ In NHDES’ Sampling Guidance #1 for Hydropower Studies, last revised April 23, 2021, NHDES states that thermal stratification occurs if there is a one degree Celsius or greater change in temperature per one meter or less of depth based on vertical profile temperature measurements beginning at a depth of 0.5 m below the impoundment surface to a depth of 0.5 m above the bottom of the impoundment. Impoundments that are not thermally stratified, are thermally unstratified.

to August 2, 2020. In a bypass reach water quality study report included in the FLA (see Fact C-59), the Applicant summarized the following results of the study (NHDES excludes the Applicant’s references to figures and table from the Applicant’s summary), among other summaries:

“Temperature and DO in the bypass reach fluctuated on diurnal cycles throughout the study period. A drop in temperature and elevated DO in the middle of the month coincides with a spike in flow conditions in the Pemigewasset – indicating influence from rainfall. [...]

Water in the bypass reach was consistently above NH DES minimum water quality standards for Class B waters throughout the study period. [...]

Flows in the bypass reach during the study period ranged from a low of 14.2 cfs on July 17 to a high of 127.9 cfs on July 1. DO and temperature readings in the bypass reach were not correlated with these measured fluctuations in flow from the impoundment.

Throughout a wide range of flow conditions and high air temperatures during the study period, the DO remained elevated above NH DES standards. Additionally, the extent of the wetted perimeter did not significantly change between flow conditions that were not characterized as storm flow. Both when turbines were operational and not operational, water quality conditions were consistent throughout the study period. As such, the minimum flow of 29 cfs is evidently adequate to maintain water quality conditions that are consistent with NH DES standards.”

A summary of the results of those measurements are summarized in the table, below, as provided in Table 2 of the bypass reach water quality study report. As indicated in the table, the study captured periods of relatively high water temperatures, which NHDES considers to be water temperatures of 25 degrees Celsius (°C) or higher.

Parameter	Minimum	Maximum	Average
Temperature (°C)	14.90	26.08	21.01
Dissolved Oxygen Concentration (mg/l)	7.92	10.30	8.96
Dissolved Oxygen Percent Saturation	92.91	102.19	98.00

- D-33. The results of the 2018 water quality study showed one instance thermal stratification in impoundment of the Project (see Finding D-30) and one excursion of New Hampshire’s pH standards upstream of the Project’s impoundment. The 2018 study and the 2020 bypass reach water quality study showed that that temperature decreased and dissolved oxygen generally increased with greater river flows, particularly at the impoundment sampling location, and that dissolved oxygen levels were lowest in the impoundment sampling location (see Findings D-27). The Applicant is currently required to maintain a minimum flow release immediately below the Project dam and into the bypass reach of 25 cfs or inflow to the Project, whichever is less. (see Finding D-4).
- D-34. The Project has altered the wetted natural river channel (i.e., the channel is deeper and wider) and associated discharge characteristics (i.e., slower and more stagnant) which makes the river more prone to adverse water quality impacts (Finding D-12). These alterations have likely contributed to higher temperatures and occasional thermal stratification in the Project impoundment when inflow to the Project is relatively low.
- D-35. *Water Quality Improvement Plan (WQIP)*: The surface waters affected by the Project and in the vicinity

of the Project have been designated as Outstanding Resource Waters (see Fact C-40 and D-17). The Project impoundment formed by the dam of the Project has resulted in a deeper, wider, and slower moving section of the river that can stratify and is more prone to thermal stratification and adverse water quality impacts such as low dissolved oxygen than riverine sections that are not impounded. It is possible that if the dam was not there, temperature would not be highest and dissolved oxygen levels lowest in the Project impoundment as demonstrated by the 2018 and 2020 water quality studies. This is not to suggest that NHDES is advocating for the dam to be removed, rather it is to make the point that the Project, even when not generating, can still be responsible for causing adverse changes in river water quality. Conditions of this certification help ensure that any degradation of surface waters caused by discharges from the Project are minimized and will protect existing and designated uses in accordance with Env-Wq 1708.04 (see Facts C-18 and C-40).

According to Env-Wq 1703.01(b), “[a]ll surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters” (see Fact C-25). Results of the water quality study conducted by the Applicant in 2018 and 2020 showed that the Project has not impaired existing and designated uses. However, to address any violations of Surface Water Quality Standards that may arise in the future at a magnitude, duration, and frequency that contributes to an impaired designated use in the Project influenced waters, it would be necessary to require the Applicant to prepare and implement a WQIP (see Fact C-18). The purpose of a WQIP would be to restore surface waters to meet Surface Water Quality Standards in accordance with Env-Wq 1703.01(b) for parameters that are influenced by the Project. If the riverine segment immediately upstream and beyond the influence of the Project impoundment is not meeting Surface Water Quality Standards, then the purpose of the WQIP would be to restore surface waters so that the parameters of water quality that are influenced by the Project are not any worse than in the upstream riverine segment. Parameters that may be influenced by the Project include, but are not limited to, dissolved oxygen, temperature, pH, nutrients, chlorophyll-a, and secchi disk (i.e., turbidity). A WQIP would include measures to achieve the purpose of the WQIP; a schedule for implementing the measures; water quality monitoring and reporting to determine the effectiveness of the implemented measures; and recommendations for next steps. RSA 485-A:12, III authorizes water quality monitoring (see Fact C-8 and Finding D-11). Condition E-15 addresses this Finding.

- D-36. *Dissolved Oxygen and Temperature Water Quality Monitoring and Reporting:* Results of the water quality study conducted by the Applicant in 2018 showed one instance of thermal stratification in the impoundment of the Project (see Finding D-29) and that dissolved oxygen levels were lowest in the impoundment sampling location (see Findings D-29 and D-30). Results of the water quality study conducted by the Applicant in 2020 demonstrated compliance with dissolved oxygen and temperature Surface Water Quality Standards. If a violation of a Surface Water Quality Standard for dissolved oxygen or temperature arises in the future at a magnitude, duration, and frequency that contributes to an impaired designated use, additional monitoring would be necessary during the term of the license. This is because FERC licenses are typically issued for 30 to 50 years and, during that time, conditions in the watershed that could affect water quality in the Project impoundment and Project discharges to the tailrace and bypass reach, can change. For example, due to climate change “[w]armer summer temperatures will likely lead to an increase in drought (through increased evaporation, heat waves, and more frequent and extreme convective precipitation events).”²⁵ An increase in the frequency and

²⁵ Wake, Cameron P.; Burakowski, Elizabeth A.; Wilkinson, Peter; Hayhoe, Katharine; Stoner, Anne; Keeley, C.; and LaBranche, Julie, "Climate Change in Southern New Hampshire: Past, Present and Future" (2014). The Sustainability Institute. 2. <https://scholars.unh.edu/sustainability/>

magnitude of lower river flows and higher temperatures could result in an increase in the frequency and magnitude of dissolved oxygen excursions and higher water temperatures. If a WQIP becomes necessary because of a violation of a Surface Water Quality Standard for dissolved oxygen or temperature, additional monitoring would be necessary. Condition E-16 addresses this need.

The purpose of the monitoring is to: 1) determine the effects of Project operation, both spatially and temporally (in terms of flow, impoundment elevation and power generation) on water temperature and dissolved oxygen (i.e., dissolved oxygen concentration and dissolved oxygen percent saturation); 2) to compare results to Surface Water Quality Standards; and 3) to determine if additional changes in Project operation or the WQIP are necessary to comply with Surface Water Quality Standards.

In the event that Condition E-15 is triggered by a violation of Surface Water Quality Standards at a magnitude, duration, and frequency that contributes to an impaired designated use related to dissolved oxygen or temperature, Condition E-16 requires inclusion of monitoring and reporting plan in a WQIP for NHDES review and approval. This is so the plan can be updated (if necessary) to conform to NHDES' latest monitoring protocols and/or to any changes in dissolved oxygen or temperature Surface Water Quality Standards. Condition E-16 also includes some specifics of what the monitoring and reporting plan shall include which are very similar to the monitoring and reporting protocols used to by the Applicant to prepare the 2018 water quality study included in the Final License Application (see Fact C-59). This includes submittal of data in a working spreadsheet and input of all data into the NHDES Environmental Monitoring Database (EMD), so the data is accessible to the public and is available for use by NHDES to conduct surface water quality assessments required every two years by the sections 305(b) and 303(d) of the Federal Clean Water Act.

Inclusion of monitoring conditions is authorized by RSA 485-A:12, III (see Fact C-8) which states the following: "Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards" (see Fact C-8 and Finding D-11).

Flow / Impoundment Management

- D-37. *Applicant's Proposal:* As discussed in Findings D-5, the Applicant proposes to 1) continue to operate the Project in a run-of-river mode; 2) increase minimum flow from 25 cfs to 29 cfs, or instantaneous inflow if flows are less than 29 cfs, to the bypass reach of the Project to improve aquatic life in the bypass reach; 3) use an installed pond level transducer to help ensure that 29 cfs is being released to the bypass reach; 4) close the smolt bypass and divert associated flow to help ensure a minimum of 29 cfs or instantaneous inflow is released to the bypass reach; and 5) open the low-level outlet gate at the base of the Forest Service's Campton Dam to pass sediment from Campton Pond as needed to maintain a deep pool immediately upstream of the dam in a manner that is consistent with the Operation and Maintenance Plan appended to the a Special Use Permit issued by the Forest Service for resources of the Project.
- D-38. *Run-of-Release and Bypass Reach Flows:* The Project includes a bypass reach that is approximately 600 to 900 feet long and extends between the dam and tailrace [see Fact D-4]. Under the current FERC license, the Applicant is required to operate the Project in run-of-river mode and release the following minimum flows to the bypass reach: during periods of non-generation, or if inflow to the project is less than 25 cfs, inflow to the project shall be discharged over the spillway; and b) during periods of generation, or if inflow to the project is greater than 25 cfs, 4.5 cfs shall be discharged through the Atlantic salmon smolt bypass facility (see Finding D-4). Flow affects the quality and quantity of aquatic

habitat, and directly impacts aquatic biota (e.g., movement, stranding, spawning and tributary access).

In USFWS' letter that it filed with FERC on September 2, 2021 (see Fact C-60), USFWS provided the following recommendations pursuant to Section 10(j) of the FPA:

"1. To protect the fluvial geomorphic processes within the Mad River and support aquatic habitats and the species that reside there, the Licensee should operate the Project in an instantaneous run-of-river mode, whereby inflow to the Project will equal outflow from the Project at all times, and water surface elevations within Campton Pond are not drawn down for the purpose of generating power. Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the Licensee, or for short periods upon mutual agreement between the Licensee, [USFWS], the Forest Service, [NHFGD], and [NHDES].

2. To protect aquatic resources and habitats and water quality within the Project's bypass reach, the Licensee should provide a minimum instream flow of 29 cfs into the Project's bypassed reach downstream of the Campton Dam. The Licensee should release the flow as uniform spill across the dam's crest. These minimum instream flow releases may be temporarily modified if required by operating emergencies beyond the control of the Licensee, or for short periods upon mutual agreement between the Licensee, [USFWS], the Forest Service, the [NHFGD], and [NHDES]."

In the Environmental Assessment for Hydropower License that FERC issued on August 10, 2022,¹² FERC stated the following, among other things about run-of-release and bypass reach flows:

"To ensure that project operation does not impede with the Forest Service's ability to release 29 cfs to the bypassed reach, in order to help protect and enhance aquatic resources in the bypassed reach, manage withdrawals from the Forest Service's Campton Pond as follows, in a manner consistent with the 1985 Special Use Permit: (1) only withdraw water from Campton Pond for project generation when inflow to Campton Pond equals or exceeds 52 cfs (i.e., the 23-cfs minimum hydraulic capacity of the project plus the 29-cfs bypassed reach flow); and (2) when inflow to Campton Pond exceeds 52 cfs, manage flow through the turbines so that 29 cfs is available for the Forest Service to release over the spillway, instead of [the Applicant]'s proposal to release 29 cfs or instantaneous inflow, if less, over the spillway to the bypassed reach; [...]

[The Project's dam and impoundment] are owned and operated by the Forest Service and are not part of the project. [FERC] cannot require [the Applicant] to release a 29-cfs minimum bypassed reach flow from the Forest Service's dam or require the Forest Service to release flow from [the Project's dam]. [FERC] can only enforce conditions as they apply to the licensed project facilities, and [the Applicant] can only operate the project using flow that is released in accordance with the 1985 Special Use Permit. To ensure that project operation does not impede with the Forest Service's ability to release 29 cfs to the bypassed reach, [the Applicant] could manage withdrawals from [the Project impoundment] as follows, to the extent consistent with the 1985 Special Use Permit: (1) only withdraw water from [the Project's impoundment] for project generation when inflow to [the Project's impoundment] equals or exceeds 52 cfs (i.e., the 23-cfs minimum hydraulic capacity of the project plus the 29-cfs bypassed reach flow); and (2) when inflow to [the Project's impoundment] exceeds 52 cfs, manage flow through the turbines so that 29 cfs is available for the Forest Service to release over the spillway. Operating the project in this manner would provide the same benefits as [the Applicant's] proposal and [USFWS's] recommendation at no additional cost, and we recommend it.

Regarding [USFWS's] recommendation to operate the project in a run-of-river mode, it is more

accurate to refer to the current operating mode as run-of-release instead of run-of-river because [the Applicant's] intake flows are dependent on flows made available by the Forest Service from Campton Pond. Campton Dam and Pond are owned and operated by the Forest Service and are not part of the project. [FERC] cannot require the Forest Service to release a certain amount of flow from Campton Pond or dictate to the Forest Service the manner in which it shall be released. The [FERC] can only enforce conditions as they apply to the licensed project facilities, and [the Applicant] can only operate the project using flow that is released by the Forest Service and in the manner dictated by the Forest Service in accordance with the 1985 Special Use Permit."

In USFWS' comments on FERC's environmental assessment that it filed on September 1, 2022, USFWS stated that FERC's recommendations in its environmental assessment for run-of-release and minimum bypass flows for the Project were consistent with the intent of USFWS' recommendations under section 10(j) of the FPA. However, USFWS requested that FERC modify recommendation for run-of-release for the Project to include an appropriate time-step and provided the following example: "The Licensee shall operate the project in a run-of-release mode such that total outflow from Campton Pond approximates inflow to Campton Pond at any time."

NHDES concurs with the USFWS' Section 10(j) recommendation to operate the Project in a run-of-release mode. Operating in this manner will minimize impoundment fluctuations and maintain a more natural flow regime downstream of the tailrace, which will protect habitat for a variety of aquatic and riparian species and help ensure compliance with Surface Water Quality Standards including, but not limited to, "Biological and Aquatic Community Integrity" (Env-Wq 1703.19 – see Fact C-36) and Env-Wq 1703.01(d) regarding maintaining surface water quantity (e.g., flow) at levels that protect existing uses and designated uses (see Fact C-25).

NHDES concurs with USFWS recommendation that a minimum of 29 cfs be discharged to the bypass reach and concurs with the approach provided by FERC to able to provide this minimum flow or inflow, whichever is less.

Conditions E-11.a and E-11.b address this Finding.

- D-39. *Impoundment Water Level:* In the FLA, the Applicant proposes to maintain a steady-state surface water elevation of 644 feet (see Finding D-5). This is accomplished with a pond level transducer that is integrated with an automated system that operates the Project's turbines to adjust for inflow and maintains a steady-state water surface elevation within the impoundment.

NHDES concurs with the applicant that it should minimize the frequency and magnitude of fluctuations in the impoundment by controlling discharges at the Project as much as possible because it will help protect the flora and fauna in the littoral and riparian zones of the impoundment and help to assure compliance with Surface Water Quality Standards including, but not limited to, "Biological and Aquatic Community Integrity" (Env-Wq 1703.19 – see Fact C-36 and Finding D-41). Condition E-11.c addresses this Finding.

- D-40. *Impoundment Refill Procedures:* Following authorized drawdowns, a refill procedure is necessary to ensure adequate flow (i.e., discharge) from the Project is maintained downstream of the Project dam and adequate flow is available to refill the impoundment at an appropriate rate to protect aquatic habitat and aquatic life. In USFWS' letter that it filed with FERC on September 2, 2021 (see Fact C-60), USFWS provided the following recommendations pursuant to Section 10(j) of the FPA:

"3. To protect aquatic resources of the Mad River downstream of the Project, the Licensee should

implement a reservoir refill protocol whereby, in the event of reservoir drawdown, 90 percent of inflow is passed downstream of the Project's tailrace, and the reservoir is refilled on the remaining 10 percent of inflow. This refill protocol may be modified on a case-by-case basis with the prior approval of [USFWS], the Forest Service, [NHFGD], and [NHDES]."

In the Environmental Assessment for Hydropower License that FERC issued on August 10, 2022,¹² FERC stated the following in its analysis of an impoundment refill procedure for the Project:

"The 90/10 refill procedure recommended by [USFWS] would ensure that flows downstream of the powerhouse are kept near inflow levels and that the impoundment is refilled in a timely manner following drawdowns for maintenance. Minimizing the length of time that the impoundment is drawn down and that flows are reduced downstream, as recommended by Interior, would help maintain the existing aquatic habitat for fish and other aquatic species during drawdowns for routine maintenance.

As discussed above, Campton Pond and Campton Dam are owned and operated by the Forest Service and are not part of the project. [FERC] cannot require the Forest Service to release a certain amount of flow from Campton Pond. [FERC] can only enforce conditions as they apply to the licensed project facilities, and [the Applicant] can only operate the project using flow that is released by the Forest Service in accordance with the 1985 Special Use Permit."

NHDES concurs with the USFWS' Section 10(j) recommendations for the impoundment refill procedures because it will help to minimize dramatic and sudden reductions in downstream flow (i.e., discharges) due to Project operation (which can adversely impact habitat and aquatic life), while still providing sufficient flow to refill the pond to the normal elevation after impoundment refill.

These measures will help to maintain sufficient habitat for aquatic life and help to assure compliance with Surface Water Quality Standards, including, but not limited to, "Biological and Aquatic Community Integrity" (Env-Wq 1703.19 – see Fact C-36) and Env-Wq 1703.01(d) regarding maintaining surface water quantity at levels that protect existing uses and designated uses (see Fact C-25). Condition E-11.d addresses this Finding.

- D-41. *Impoundment Drawdown Rate During Scheduled Maintenance:* The NHFGD recommends controlling Project discharges when drawing the impoundment down for maintenance so that the impoundment level decreases by no more than approximately six (6) inches per 24-hour period. This is done to allow adequate time for the less mobile aquatic organisms (including, but not limited to mussels), to move and stay sufficiently submerged as the water level gradually recedes.

In Appendix 4 of the FLA, the Applicant summarizes the results of a mussel survey of the impoundment of the Project that was conducted on July 8, 2018 and provides a copy of the report of the survey (see Fact C-59). The survey area included 200 meters of the Mad River upstream of the impoundment to downstream of the powerhouse of the Project. Results of the survey showed that no live mussels, shells, or shell fragments were found during the survey.

In NHFGD's letter that it filed with FERC on September 7, 2021 for the Project, NHFGD provided the following comments regarding the mussel survey (see Fact C-61):

"Mussel Survey - The NHFGD requested a Rare, Threatened and Endangered species freshwater mussel study outlined within its PAD letter dated April 12, 2018. The Applicant hired Biodrawversity, LLC to conduct the mussel survey as requested and outlined by NHFGD. The survey results indicated

that there was poor or marginal mussel habitat upstream from the dam and the bypass reach. No live mussels, shells or shell fragments were found for any species of mussel. Following this survey, there appears to be no evidence that would suggest that the project operations would effect state-listed or any native mussel species in the area. [NHFGD] concurs with this conclusion for this Project at this time.”

NHDES concurs with NHFGD that no additional measures beyond NHFGD’s recommended drawdown rate for scheduled maintenance are necessary at this time. That measure will help to maintain sufficient habitat for aquatic life and help to assure compliance with Surface Water Quality Standards, including, but not limited to, “Biological and Aquatic Community Integrity” (Env-Wq 1703.19 – see Fact C-36) and Env-Wq 1703.01(d) regarding maintaining surface water quantity at levels that protect existing uses and designated uses (see Fact C-25). Condition E-11.e addresses this Finding.

D-42. *Low-Level Outlet Gate Releases:* As described in the memo that FERC filed for the Project on June 15, 2022, the Applicant plans to open the low-level outlet gate at the base of the Forest Service’s Campton Dam to pass sediment from Campton Pond as needed to maintain a deep pool immediately upstream of the dam [see Fact C-64]. In the Environmental Assessment for Hydropower License that FERC issued on August 10, 2022,¹² FERC provided the description and analysis of low-level outlet gate releases:

“[The Applicant] states that it has not opened [the gate] in recent history and is not aware of any sediment releases that have occurred under the current license. [The Applicant] proposes to retain the ability to open the low-level outlet gate to pass sediment on an as-needed basis, which ‘would be rare’ during the term of any subsequent license. [...]

Sediment accumulation in an impoundment can reduce the volume of water that can be stored in the impoundment, which can affect the frequency and duration of hydropower production for projects that rely on the use of stored water. Although the Special Use Permit provides the option of opening the low-level gate to release accumulated sediment, [the Applicant] has no record of utilizing the low-level gate for this purpose under the current license. Since the project operates in a run-of-release mode and not as a storage project, sediment releases during the term of any subsequent license would be infrequent. [...]

[T]he substrate of Campton Pond near Campton Dam is composed of silt, sand, and occasional bedrock. Downstream of Campton Dam, the substrate in the bypassed reach consists primarily of large cobble, boulder, and bedrock. Releasing accumulated sediments could increase substrate and habitat diversity in the bypassed reach for fish, which could have long-term benefits for the fish reproduction and foraging in the bypassed reach. However, sediment releases could result in short-term adverse effects on water quality and fish in the bypassed reach, including by reducing oxygen uptake across gills and smothering fish eggs while the gate is opened. Since sediment releases would be infrequent during any subsequent license, these adverse effects would not likely significantly affect the fish population in the bypassed reach.

Since the low-level outlet gate is part of Campton Dam, which is owned and operated by the Forest Service, and is not part of the project, [FERC] cannot require [the Applicant] to open the gate. [the Applicant] would only be able to open the gate to the extent consistent with the 1985 Special Use Permit.”

NHDES concurs with FERC’s analysis that opening the low-level outlet gate could cause sediment to be released to the bypass reach of the Project that could result in short-term adverse effect on water quality. A sediment release could result in increases in surface water turbidity or settling of sediment in

surface waters to form harmful benthic deposits, which could cause noncompliance with Surface Water Quality Standards for turbidity and benthic deposits (see Facts C-14, C-26, C-29, C-31, and C-40). Therefore, prior to conducting a release, NHDES determined that it is necessary for the Applicant to develop a low-level outlet release plan that would describe how the release would be conducted, monitored, and reported to ensure compliance with Surface Water Quality Standards. Condition E-11.f addresses this Finding.

- D-43. *Flow and Impoundment Compliance Monitoring Plan:* In USFWS' letter that it filed with FERC on September 2, 2021 (see Fact C-60), USFWS provided the following recommendations pursuant to Section 10(j) of the FPA:

"4. The Licensee, within 3 months of license issuance, should prepare and file for approval by [USFWS], the Forest Service, the [NHFGD], and [NHDES], a plan to provide, maintain, and monitor run-of-river operation at the Project and minimum flow releases into the Project's bypass reach. The plan should detail the methods for recording data on run-of-river and minimum bypass flow operations and provide for: (1) maintaining the data for inspection by [USFWS], the Forest Service, the [NHFGD], and [NHDES]; and (2) filing annual and event-specific non compliance reports with [FERC]."

In the Environmental Assessment for Hydropower License that FERC issued on August 10, 2022,¹² FERC provided the following staff-recommended measures:

"Develop an operation compliance monitoring plan for maintaining and monitoring compliance with the operational requirements of any subsequent license that may be issued;"

NHDES concurs with USFWS' and FERC's recommendations. The development and implementation of a plan describing how flow and impoundment water level will be managed, monitored, and reported (as allowed by RSA 485-A:12, III – see Finding D-11) will monitor compliance with the operational requirements of the license and this certification, and facilitate NHDES' oversight and protection of surface waters affected by the Project to ensure compliance with Surface Water Quality Standards (RSA 485-A:8 and Env-Wq 1700 – see Finding D-14). Condition E-13 addresses this Finding.

Water Use Registration and Reporting

- D-44. *Water Use Registration and Reporting:* The Project is currently registered with the NHDES WURRP and has been reporting water use of the Project to the NHDES WURRP since 1988 (see Facts C-45 through C-49). The Applicant must continue to report under this water use in accordance with Env-Wq 2102 (see Facts C-45 through C-49). The WURRP provides valuable data for tracking volumes of discharges to, and withdrawals from, surface waters and other sources throughout the state, including water use of the Project. This water quantity data assists NHDES with managing water resources to help assure surface waters have sufficient water to support the designated uses (see Fact C-25) specified in the Surface Water Quality Standards (see Finding D-14). Including a condition in this certification to require compliance with WURRP is authorized under RSA 485-A:12, III (see Finding D-11). Condition E-9 addresses this Finding.

Water Conservation Program

- D-45. *Water Conservation:* The Project is subject to the state's water conservation requirements; however, NHDES granted a waiver to the Applicant for those requirements for a period of 4 years on September 13, 2022. Therefore, by September 13, 2026 and thereafter, the Applicant will be required to comply

with the rules for water conservation under Env-Wq 2101.05(f) and Env-Wq 2101.24(a)(5) or apply for and obtain a waiver to those rules under Env-Wq 2101.23 from NHDES. Condition E-10 addresses this Finding.

Fish Passage

- D-46. *Impact of Dams on Fish Migrations*: Dams can impact both upstream and downstream fish migration in rivers (Limburg and Waldman 2009, p. 961). Dams not only block or impede fish migration, but also alter the rivers' hydrology and aquatic habitat availability. Upstream of dams, where water flow is slowed, lake-like conditions, rather than riverine ones, prevail. Water flow downstream of dams, particularly at peaking hydroelectric projects, can be altered significantly (Limburg and Waldman 2009, p. 961) with dramatic changes in water depth and velocity occurring over short time periods. Depending on the severity and location of blockages and changes to hydrology, migratory fish populations can be severely reduced or extirpated due to dams (Limburg and Waldman 2009, p. 960).²⁶
- D-47. *Current Status of Fish Passage Facilities and USFWS Recommendations*: In USFWS' letter that it filed with FERC on September 2, 2021 (see Fact C-60), USFWS provided the following description of fish passage:

"In its FLA, the Applicant proposes to close the downstream Atlantic salmon smolt bypass facility to support accurate measurements of flow to the Project's bypass reach. The smolt bypass facility was employed during the Atlantic salmon restoration program for the Merrimack River watershed to provide safe, timely, and effective downstream smolt passage through the Project. However, that program was discontinued in 2013. Currently, there are no diadromous fish species in the vicinity of the Project that would benefit from the operation of the smolt bypass facility's operation. Therefore, [USFWS] does not object to its closure.

While there are currently no diadromous species in the Project's vicinity, ongoing restoration efforts for diadromous fish, including American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*) (collectively, alosine species), and American eel (*Anguilla rostrata*), continue in the Merrimack River watershed. The Merrimack River Comprehensive Plan for Diadromous Fishes (Comprehensive Plan) notes that alosine species were likely precluded from the upper reaches of the Merrimack River watershed where the Project is located; however, future decisions for restoration of alosine species may choose to utilize upper watershed habitats as a management strategy to promote alosine species restoration within the Merrimack River watershed.^[27]

In contrast, the Comprehensive Plan notes that American eel were historically abundant throughout the Merrimack River watershed and are still present in the mainstem, all major tributaries, and in many inland waters such as Lake Winnepesaukee. While the current presence of American eel at the Project is unlikely, eel are capable of reaching the Project. As ongoing restoration efforts are implemented throughout the watershed and impediments to migration are removed, the American eel population and distribution is expected to grow. Therefore, it is foreseeable that passage and protection measures at the Project, during the term of a new license, may be warranted. For this reason, the [USFWS]'s 10(j) Recommendation 8 recommends the Licensee develop a plan to monitor

²⁶ Karin E. Limburg, John R. Waldman, Dramatic Declines in North Atlantic Diadromous Fishes, *BioScience*, Volume 59, Issue 11, December 2009, Pages 955–965.

²⁷ The Merrimack River Comprehensive Plan for Diadromous Fishes was filed with FERC on June 17, 2021, and approved by FERC on June 21, 2021, Accession numbers: 20210617-5016 and 20210621-3013, respectively.

for the presence of upstream migrating American eel at the Project for one migration season, every 10 years for the durations of the license term. Recommendation 8 also includes provision for the construction and operation of upstream and downstream eel passage facilities and protection measures if future monitoring results indicate a need for the measures, as determined in consultation between [USFWS], other resource agencies, and the Licensee.”

In USFWS’ letter that it filed with FERC on September 2, 2021 (see Fact C-60), USFWS provided the following recommendations pursuant to Section 10(j) of the FPA:

“8. To facilitate the restoration efforts of American eel within the Merrimack River watershed and provide the appropriate protections during the term of any new license, the Licensee, within 4 years of license issuance, should prepare a plan, in consultation with [USFWS], the Forest Service [NHFGD], and [NHDES] (collectively, the agencies), to monitor for the presence of upstream migrating American eel at the Project. At a minimum, the plan should include: (1) specific survey protocols that incorporate nighttime visual surveys and daytime electrofishing efforts; (2) provisions to survey for American eel during the eel migration season, every 10 years for the durations of the license term, with the first occurrence in the fifth year of the license term; (3) provisions for a report to be filed with [FERC] (for approval if appropriate) by January 31 of the year following each survey and after consultation with the agencies on the draft report; and (4) provisions to modify the plan. The survey report should include: (1) current survey results; (2) a trend analysis of current and previous survey results; (3) any recommendations by the Licensee to: (a) amend the plan, including frequency of surveys; and/or (b) develop upstream and downstream fish passage and protection measures for American eel; (4) a copy of the agencies’ comments on the draft report; and (5) the Licensee’s response to the agencies’ comments on the draft report.”

In NHFGD’s letter that it filed with FERC on September 7, 2021 for the Project, NHFGD provided the following comments regarding fish passage (see Fact C-61):

“[NHFGD] appreciates the Applicants data collection efforts to date; however, after review of the study results, the Final License Application (FLA) and FERC’s Notice of Application Ready for Environmental Analysis document, the NHFGD concurs and supports [USFWS]’s expert opinion on fish passage recommendations, solutions and comments, as submitted by their official letter dated September 2, 2021 (FERC Accession #20210902-5051) regarding this Project. [...]

The Merrimack River Comprehensive Plan for Diadromous Fishes (Comprehensive Plan) notes that alosine species may not be present at this time from the upper reaches of the Merrimack River watershed where the Project is located; however, future decisions for restoration of alosine species within the upper watershed habitats may occur as a management strategy to promote alosine species restoration within the Merrimack River watershed.^[27] As referenced within the USFWS letter, [NHFGD] fully supports and encourages all efforts to improve future diadromous fish passage at this Project, in order to restore sustainable diadromous fish populations, when conditions are deemed appropriate. We also encourage that the NHFGD be included in all future discussions relative to the expansion of diadromous fish passage.

Historically the American eel were abundant throughout the Merrimack River watershed and are present in the Merrimack River main stem, all major tributaries, and in many inland waters such as Lake Winnepesaukee. As on-going restoration efforts are implemented throughout the watershed and impediments to migration are removed, the American eel population and distribution is expected to grow. Therefore, [NHFGD] concurs with the USFWS’ recommendation that American eel passage may be possible at some point in time at this location, warranting future protection

measures at the Project during the term of a new license.

Agree with the USFWS 's 10(j) Recommendation for the Licensee to develop a plan to monitor for the presence of upstream migrating American eel at the Project for one migration season, every ten-years for the durations of the license term. Recommendation 8 also includes provision for the construction and operation of upstream and downstream eel passage facilities and protections measures if future monitoring results indicate a need for the measures and as determined in consultation between Service, other resource agencies, and the Licensee.”

In the Environmental Assessment for Hydropower License that FERC issued on August 10, 2022,¹² FERC provided the following staff-recommended measures:

“Develop a plan to monitor for eels migrating upstream at the project every 10 years during the term of any subsequent license, including nighttime visual surveys and daytime electrofishing, and file a report on each survey to document the presence of any eels and any proposals to develop eel passage measures;”

NHDES concurs with the recommendations of USFWS and NHFGD that the Applicant, within 4 years of license issuance, prepare a plan, in consultation with USFWS, the Forest Service, NHFGD, and NHDES to monitor for and report on the presence of upstream migrating American eel at the Project. NHDES also concurs with the recommendations of FERC. Condition E-14.a addresses this Finding.

- D-48. *Fish Passage:* Adequate upstream and downstream fish and American eel passage is necessary to comply with Surface Water Quality Standards, including, but not limited to, support of the aquatic life designated use (Env-Wq 1707.17(d) – Fact C-18), protection and propagation of fish (Env-Wq 1701.01 – see Fact C-10), and to help assure compliance with the “Biological and Aquatic Community Integrity” Surface Water Quality Standard (Env-Wq 1703.19 – see Fact C-36). Because the Project has created conditions and discharge characteristics that prevent adequate fish and eel passage up and downstream, and, therefore, compliance with Surface Water Quality Standards, fish and eel passage conditions may be necessary after granting of this certification.

In USFWS’ letter that it filed with FERC on September 2, 2021 (see Fact C-60), USFWS requested that FERC include the following reservation of authority in any license issued for the Project:

“Authority is reserved to the Federal Energy Regulatory Commission to require the Licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance, of such fishways as may be prescribed by the Secretary of the Interior during the term of the license pursuant to Section 18 of the Federal Power Act.”

NHDES supports USFWS’s request that FERC include a reservation of authority in a license issued for the Project to construct, operate, and maintain, or provide for the construction, operation, and maintenance, of such fishways as may be prescribed by USFWS under section 18 of the FPA during the term of a FERC license. Condition E-14.b addresses this Finding.

E. CERTIFICATION CONDITIONS

Unless otherwise authorized or directed by NHDES, the following conditions shall apply:

- E-1. **Effective Date and Expiration of Certification:** This certification shall become effective on the date of issuance and shall remain effective for the term of the federal license or permit. Should the federal

authority deny a license or permit, the certification becomes null and void.

- E-2. **Conditions in Federal License or Permit:** Conditions of this certification shall become conditions of the federal license or permit (U.S.C. § 1314(d)).

For an explanation and authority for this condition, see Fact C-2 and Finding D-1.

- E-3. **Compliance with Surface Water Quality Standards:** The Project shall not cause or contribute to a violation of Surface Water Quality Standards.

For an explanation and authority for this condition, see Facts C-2, C-8 and C-58 and Finding D-14.

- E-4. **Proposed Modifications to the Project:** The Applicant shall consult with and receive prior written approval from NHDES regarding any proposed modifications to the Project that could have a significant or material effect on the findings or conditions of this certification, including any changes to the operation of the Project. If necessary, to assure compliance with Surface Water Quality Standards and associated management objectives, NHDES may alter or amend this certification in accordance with condition E-5.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Finding D-11.

- E-5. **Modification of Certification:** The conditions of this certification may be altered or amended at any time by NHDES to assure compliance with Surface Water Quality Standards and associated management objectives, when authorized by law, and, if necessary, after notice and opportunity for hearing.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Finding D-11.

- E-6. **Reopening of License:** NHDES reserves the right to request, at any time, that FERC reopen the license to consider modifications to the license to assure compliance with Surface Water Quality Standards.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Finding D-11.

- E-7. **Compliance Inspections:** In accordance with applicable laws, the Applicant shall allow NHDES to inspect the Project and affected surface waters to monitor compliance with the conditions of this certification.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Finding D-11.

- E-8. **Transfer of Certification:** Should this certification be transferred to a new owner or operator of the Project, contact information for the new owner (including name, address, phone number and email) shall be provided to NHDES within 30 days of the transfer.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Finding D-11.

- E-9. **NHDES Water Use Registration and Reporting:** The Applicant shall measure all withdrawals and discharges of the Project and report them to the NHDES WURRP in accordance with RSA 488:3 and its supporting regulations in Env-Wq 2102.

For an explanation and authority for this condition, see Facts C-2, C-8, and C-54 through C-58 and

Findings D-11 and D-44.

- E-10. **NHDES Water Conservation:** At all times that the Project is subject to water conservation requirements, the Applicant shall either comply with the rules for water conservation under Env-Wq 2101.05(f) and Env-Wq 2101.24(a)(5) or hold a waiver to those rules under Env-Wq 2101.23 from NHDES.

For an explanation and authority for this condition, see Facts C-2, C-8, and C-50 through C-54 and Findings D-11 and D-45.

- E-11. **Flow / Impoundment Management:** The Applicant shall operate the Project in accordance with the following requirements to the extent consistent with a Special Use Permit issued by the Forest Service for resources used by the Project and within control of the Applicant. The following requirements (items a. through f.) may be temporarily modified if required by operating emergencies beyond the control of the Applicant, as specified below, or as allowed in the approved Flow/Impoundment Compliance Monitoring Plan (FICMP) that is required by Condition E-13 of this certification. This certification does not require the Applicant to comply with the following requirements during an “emergency condition”, which is defined under Env-Wr 101.15 as the following: “(a) A situation has arisen at a dam which could jeopardize the integrity of the dam; or (b) Failure of the dam is imminent or has occurred.”

- a. **Run-of-Release Flow:** The Applicant shall operate the Project in a run-of-release mode such that total outflow from Campton Pond approximates inflow to Campton Pond at any time and water levels above the dam are not drawn down for the purpose of generating power. Run-of-release operation may be temporarily modified if required by operating emergencies beyond the control of the Applicant or for short periods upon mutual agreement between NHDES, NHFGD, USFWS, and the Forest Service.

For an explanation and authority for this condition, see Facts C-2 and C-8 and D-5, D-11 and D-38.

- b. **Bypass Reach Flows:** The Applicant shall comply with the following bypass reach water flow requirements.
1. The Applicant shall manage withdrawals from the impoundment of the Project as follows to ensure that Project operation does not impede with the Forest Service’s ability to release 29 cfs to the bypassed reach of the Project and to help protect and enhance aquatic resources in the bypassed reach:
 - a. Only withdraw water from the impoundment for power generation when inflow to impoundment equals or exceeds 52 cfs (i.e., the 23-cfs minimum hydraulic capacity of the Project plus the 29-cfs bypassed reach flow); and
 - b. When inflow to the impoundment exceeds 52 cfs, manage flow through the turbines of the Project so that 29 cfs is available for the Forest Service to release over the spillway.
 2. Subject to approval by NHDES and NHFGD, this criterion may be modified to comply with fish passage requirements that may be prescribed by the USFWS to conform to the USFWS’s fish passage design guidelines²⁸, or other guidelines acceptable to the USFWS.
 3. The manner in which the bypass flow is released to the bypass reach shall be acceptable to

²⁸ USFWS (U.S. Fish and Wildlife Service). 2019. Fish Passage Engineering Design Criteria. USFWS, Northeast Region R5, Hadley, Massachusetts. 135 pages + Appendices.

NHDES, NHFGD, and USFWS. The Applicant shall provide evidence within 60 days of receiving a written request from NHDES (or other date acceptable to NHDES), that demonstrates, to the satisfaction of NHDES and NHFGD, that the bypass reach minimum flow is being provided. Such evidence may include, but is not limited to, hydraulic calculations and instream flow measurements.

4. The method and supporting information for passing the bypass reach flow, including any future modifications, shall be included in the Flow / Impoundment Compliance Monitoring Plan (see Condition E-13).
5. Flow in the bypass reach shall comply with Surface Water Quality Standards, including, but not limited to, dissolved oxygen (Env-Wq 1703.07 – see Fact C-28).

For an explanation and authority for this condition, see Facts C-2 and C-8 and Findings D-5, D-11, D-20, D-38, D-46, D-47, and D-48.

- c. **Impoundment Water Level:** The Applicant shall minimize the magnitude and frequency of fluctuations in the impoundment of the Project to the maximum extent practicable and shall not draw the water level in the impoundment down for the purpose of generating power. This requirement may be modified upon mutual agreement between NHDES, NHFGD, and USFWS. If requested by NHDES, the Applicant shall submit a plan for NHDES approval to minimize the magnitude and frequency of impoundment fluctuations to the maximum extent practicable, due to factors that may include, but are not limited to, Project power generation. The plan shall be submitted to NHDES within 120 days (or other date acceptable to NHDES) of when the NHDES issues the written request. The Applicant shall then implement the NHDES approved plan.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Findings D-5, D-11 and D-39.

- d. **Impoundment Refill Procedure:** When refilling the impoundment of the Project after drawdown for maintenance or emergencies, the Applicant shall release 90 percent of the inflow to the Project downstream to the Mad River and utilize the remaining 10 percent of inflow to refill the impoundment. During impoundment refill, the bypass reach flow specified in Condition E-11.b shall be maintained. This refill procedure may be modified upon mutual agreement between NHDES, NHFGD, and USFWS.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Findings D-11 and D-40.

- e. **Drawdown Procedure for Scheduled Maintenance:** When drawing the water level in the impoundment down for scheduled maintenance, the Applicant shall lower the impoundment water level no more than six (6) inches per 24-hour period. During impoundment drawdown for scheduled maintenance, the bypass reach flow specified in Condition b shall be maintained. This drawdown procedure may be modified upon mutual agreement between NHDES and NHFGD.

For an explanation and citations, see Facts C-2 and C-8 and Findings D-11 and D-41.

- f. **Low-Level Outlet Gate Releases:** Prior to conducting a low-level outlet gate release, the Applicant shall develop a low-level outlet gate release plan that describes procedures for conducting the release, monitoring of turbidity and benthic deposits during the release, and reporting the results of monitoring to NHDES. The Applicant shall submit the plan to NHDES for approval and, once

approved by NHDES, implement the plan during a release. The Applicant shall notify NHDES and NHFGD of the date(s) of such a release at least 14 days prior to a release.

For an explanation and citations, see Facts C-2 and C-8 and Findings D-11 and D-42.

- E-12. **Flow/Impoundment – Notification and Annual Report:** The Applicant shall comply with the following notification and reporting requirements:
- a. If the Project causes a deviation from the flow or impoundment management requirements in Condition E-11, the Applicant shall notify NHDES, NHFGD, and USFWS no later than 24 hours after each such incident. The notification shall include, to the extent known, an explanation as to why the deviations occurred, a description of corrective actions taken, and how long it will take until operations will comply with Condition E-11.
 - b. Within 45 days after each incident, the Applicant shall submit a report to NHDES, NHFGD, USFWS, and FERC that contains, to the extent possible, the cause, severity, and duration of the incident, any observed or reported adverse environmental impacts from the incident, pertinent data and a description of corrective measures.
 - c. By April 1 of each year (beginning the first April after the date the FERC license is reissued), the Applicant shall submit to NHDES, NHFGD, USFWS, and FERC a summary report for the previous calendar year with appropriate tables, graphs, text and supporting documentation that demonstrates compliance with the flow/ impoundment management requirements in Condition E-11. Where excursions occurred, the summary shall indicate when the excursion occurred, the duration of the excursion and a description of corrective actions taken to prevent such excursions from reoccurring.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Findings D-11, D-24, and D-38 through D-43.

- E-13. **Flow/Impoundment Compliance Monitoring Plan (FICMP):** Within 120 days of license issuance or other time period mutually agreeable to the Applicant and NHDES, the Applicant shall develop, file with FERC, and implement a flow and impoundment level monitoring and compliance plan (FICMP) that includes, at a minimum, the following:
- a. A description of the type of manual and automatic operation of the Project, including on-site and remote operation;
 - b. A detailed description of how the Project will be operated under all conditions (i.e., under normal operating conditions as well as during low flow, high flow, maintenance, and emergency conditions) to maintain compliance with the flow and impoundment level management requirements in Condition E-11;
 - c. A description that includes calculations of how the bypass reach flow will be maintained during scheduled drawdowns and the minimum impoundment level that will pass the bypass reach flow;
 - d. A description of the mechanisms and structures (i.e., type, location and accuracy of all flow and impoundment elevation monitoring equipment and gages) to be used for maintaining compliance with operational requirements;
 - e. Set point elevations for turning turbines on and off;²⁹

²⁹ Set point elevations for providing bypass reach flows should account for the accuracy of the pond level sensor equipment. For example, if the accuracy is +/- 0.01 feet, the sensor should be set 0.01 feet above the elevation determined.

- f. Procedures for maintaining and calibrating monitoring equipment;
- g. Rating curves and calculations for all methods of releasing flow downstream that includes a working Microsoft Excel spreadsheet;
- h. Procedures for collecting and recording continuous data (i.e., no less frequent than hourly and preferably every 15 minutes) on inflow, flow releases at the Project (i.e., bypass reach flow, spillage, and turbine discharge), and impoundment levels;

The FICMP, including any proposed revisions, shall be developed in consultation with NHDES, NHFGD, and USFWS, and submitted to NHDES for review and approval. The FICMP shall be kept up-to-date so that it reflects current operation of the Project. When revisions are made, the Applicant shall submit the updated FICMP to NHDES for approval within 10 days (or other date acceptable to NHDES) of making the revisions. If NHDES requests the FICMP to be updated, the Applicant shall submit the updated FICMP to NHDES for approval within 30 days (or other date acceptable to NHDES) of receiving a written request from NHDES to update the FICMP. The Applicant shall implement the approved FICMP.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Findings D-11, D-21 and D-38 through D-43.

E-14. Fish Studies and Passage:

- a. The Applicant shall develop a plan to monitor for eels migrating upstream at the Project every 10 years during the term of any subsequent license as recommended by USFWS in accordance with section 10(j) the FPA, which is provided in Finding D-47 of this certification. The Applicant shall develop the plan within four years of license issuance and in consultation with the Forest Service, USFWS, NHFGD, and NHDES.
- b. The Applicant shall construct, operate, and maintain, or provide for the construction, operation, and maintenance, of such fishways as may be prescribed by USFWS under section 18 of the FPA during the term of a FERC license.

For an explanation and authority for this condition, see Fact Facts C-2 and C-8 and Findings D-11, D-22 and D-46, D-47, and D-48.

- E-15. Water Quality Improvement Plan (WQIP):** If NHDES determines that the Project is causing or contributing to a violation of Surface Water Quality Standards at a magnitude, duration, and frequency that contributes to an impaired designated use, then NHDES shall notify the Applicant in writing, and the Applicant shall submit a WQIP to NHDES for approval within 120 days of the notification or other time period mutually agreeable to the Applicant and NHDES. The purpose of the WQIP is to restore surface waters to meet Surface Water Quality Standards in accordance with Env-Wq 1703.01(b) for parameters that are influenced by the Project. If the riverine segment immediately upstream and beyond the influence of the Project impoundment is not meeting Surface Water Quality Standards, then the purpose of the WQIP is to restore surface waters so that the parameters of water quality that are influenced by the Project are not any worse than in the upstream riverine segment. Parameters that may be influenced by the Project include, but are not limited to, dissolved oxygen, temperature, pH, nutrients, chlorophyll-a, and secchi disk (i.e., turbidity). The WQIP shall include measures to achieve the purpose of the WQIP; a schedule for implementing the measures; water quality monitoring and reporting to determine the effectiveness of the implemented measures; and recommendations for next steps. The Applicant shall include in the WQIP the monitoring and reporting specified in Condition E-16 if there is violation of Surface Water Quality Standards for dissolved oxygen or temperature. The Applicant shall implement the approved WQIP upon NHDES

approval of the plan. If the monitoring shows that properly implemented measures of the WQIP are not effective to achieve the purpose of the WQIP within 5 years from implementation of the measures, NHDES may request an amendment to the WQIP. In such cases, then NHDES shall notify the Applicant in writing, and the Applicant shall submit an amendment to the WQIP to NHDES for approval within 120 days of the request or other time period mutually agreeable to the Applicant and NHDES. The Applicant shall incorporate any changes to Project operation included in the approved WQIP, in the Flow/Impoundment Compliance Monitoring Plan (FICMP) and submit the updated FICMP to NHDES for approval as specified in Condition E-13. This Condition shall no longer apply once NHDES notifies the Applicant in writing that NHDES has determined that the Applicant has achieved the purpose of the WQIP.

For an explanation and authority for this condition, see Facts C-2, C-8, C-18, C-25 and Findings D-11, D-14 and D-35.

- E-16. **Dissolved Oxygen and Temperature Water Quality Monitoring and Reporting:** In the event that Condition E-15 is triggered by a violation of Surface Water Quality Standards at a magnitude, duration, and frequency that contributes to an impaired designated use related to dissolved oxygen or temperature, and NHDES requests a WQIP, then the Applicant shall include in the WQIP a schedule to conduct water quality monitoring within the Project boundary of the Cocheco River at least every five years to: 1) determine the effects of Project operation, both spatially and temporally (in terms of flow, impoundment elevation and power generation) on water temperature and dissolved oxygen (i.e., dissolved oxygen concentration and dissolved oxygen percent saturation); 2) to compare results to Surface Water Quality Standards; and 3) to determine if additional changes in Project operation or the WQIP are necessary to comply with Surface Water Quality Standards.

In the WQIP specified in Condition E-15, the Applicant shall specify that it will submit a monitoring and reporting plan that describes, in detail, how, when and where monitoring will be conducted, and results reported. Unless otherwise authorized or directed by NHDES, the plan shall specify that monitoring that year shall last for at least five weeks and include periods of relatively low flows and high temperatures as well as at times when the Project is, and is not, generating power. Continuous (i.e., every 15 minutes) monitoring of temperature and dissolved oxygen (i.e., dissolved oxygen concentration and dissolved oxygen percent saturation) shall be conducted in the riverine reach just upstream of the Project impoundment, at the deep spot of the Project impoundment, and below the dam of the Project and the Project tailrace, and vertical profiles for temperature and dissolved oxygen shall be conducted each week at the deep spot of the impoundment. Continuous (i.e., every 15 minutes) estimates of impoundment elevation, inflow, tailrace flow, bypass facility flows and generation shall also be provided.

By December 31st of each year that monitoring is conducted, the Applicant shall submit a report and supplemental information that clearly demonstrates via text, tables and plots, the spatial and temporal effect of Project operation (in terms of inflow and flow in the bypass reach and tailrace, impoundment elevation and power generation) on surface water quality and if Surface Water Quality Standards are met. Results of quality assurance/quality control checks (calibration, hand-held meter checks, duplicates, etc.) and identification of any deviations from the monitoring and reporting plan shall be clearly identified. In addition to the report, water quality (including uncorrected and any corrected data), continuous impoundment elevation, and continuous flow data (including calculations) should be provided in a working Microsoft Office Excel workbook or other database acceptable to NHDES. The Applicant shall also enter all data into the NHDES Environmental Monitoring Database (EMD) within 120 days of when monitoring is completed in each year monitoring is conducted.

Should monitoring indicate that violations of Surface Water Quality Standards for dissolved oxygen or temperature persist, the Applicant shall consult with NHDES and, if requested by NHDES in writing, submit an amended Water Quality Improvements Plan (WQIP) in accordance with Condition E-15.

For an explanation and authority for this condition, see Facts C-2 and C-8 and Findings D-11, D-14, D-35 and D-36)

F. ENFORCEMENT

Certification conditions are subject to enforcement mechanisms available to the federal licensing or permitting agency and to the state of New Hampshire, including those provided under NH RSA 485-A:12, III (see Fact C-8).

G. APPEAL PROCESS

Any person aggrieved by this decision may appeal to the N.H. Water Council (“Council”). An Environmental Fact Sheet with information on appealing a decision of the N.H. Department of Environmental Services can be found at the following link: [CO-7 \(nh.gov\)](#). A link to the Council’s rules, is available on the [New Hampshire Environmental Council website](#) (or more directly at the [Water Council page](#)). Copies of the rules also are available from the NHDES Public Information Center at (603) 271-2975.

If you have questions regarding this certification, please contact James Tilley, NHDES Water Quality Certification Supervisor at (603) 271-0699 or james.w.tilley@des.nh.gov.

H. SIGNATURE AND DATE



For Rene J. Pelletier, P.G., Director
NHDES Water Division

10/07/2022
Date

- ec: Ian Clark, Manager, Mad River Power Associates L.P. (the Applicant)
Corey Davenport, Town Administrator, Town of Campton
Troy Thompson (USDA Forest Service)
William Degrush (USDA Forest Service)
Ken Hogan (USFWS)
Michael Dionne (NHFGD)
Matthew Carpenter (NHFGD)
Erin Holmes (NHDES)
Stacey Herbold (NHDES)
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Ted Diers (NHDES)
FERC E-File