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**Vermont Agency of Natural Resources
Water Quality Certification Application
for Hydroelectric Facilities**

Send to: Peter LaFlamme, Director
Watershed Management Division
1 National Life Drive, Davis 3
Montpelier, VT 05620-3522

Please type or print in black ink. ALSO be sure to complete the signature block on page two.

Application for New Amended Certification (Date of original certification:)

1. Applicant:	
Contact:	
Mailing address:	
Work phone:	E-mail address:

If an agent is acting for the applicant during the permit process, complete #2.

2. Authorized agent:	
Contact:	
Mailing address:	
Work phone:	E-mail address:

3. Project name:	Geographic location (latitude/longitude):
FERC Project No. (if any):	Waterbody (stream, lake or pond) affected:
Town(s):	Dam name and Vermont Dam Inventory number (if any):

4. Project description. Concisely describe the project infrastructure, how the project will be operated, the components of any proposed mitigation or enhancements and how the complete proposal will meet Vermont Water Quality Standards:

5. Attached materials:
List attachments. Include one printed copy and one digital copy (in Adobe Acrobat (pdf) format) of *Information Supporting a Vermont Water Quality Certification Application for a Hydroelectric Project* or a FERC application, and any other supporting documents. **List of Information Supporting Wilder Project VT Water Quality Certification Application is attached.**

6. Fee: Pursuant to 3 V.S.A. § 2822(j)(30) the application fee shall be equal to 1% of project cost with a maximum fee of \$20,000. Project cost shall be calculated as the total of capital costs and operation and maintenance expenses over a default license term. For amended certifications, project costs shall be calculated as the total capital cost associated with the amendment.

Project Cost \$	Total Enclosed \$
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Application is hereby made for a water quality certification pursuant to 33 U.S.C. §1341. Upon request, I will make available any information necessary for the Vermont Agency of Natural Resources to make a water quality certification decision. I hereby certify that the information provided with this application is true and accurate to the best of my knowledge. I recognize that by signing this application I am giving consent to employees of the State to enter the subject property for the purpose of processing this application.

John Ragonese

Signature of applicant

Date

Signature of authorized agent

Date

I hereby designate _____ to act as my agent in matters related to this certification application.

Signature of applicant

Date

This application **must** be signed by the applicant and the agent, if an authorized agent is designated.

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4. Project Description and Proposed Operation, Mitigation and Enhancements

The Project Description and the Proposed Operation, Mitigation and Enhancements are described in the amended Wilder Final License Application (Wilder FLA) submitted to Federal Energy Regulatory Commission (FERC or the Commission) on December 7, 2020¹, with a further revised composite Exhibit E for Wilder, Bellows Falls and Vernon Projects (Exhibit E) filed on June 7, 2023². The Great River Hydro (GRH) proposal, as outlined in the Wilder FLA Exhibit B (Exhibit B) reflects the proposed operation in accordance with a Memorandum of Understanding (MOU) executed on December 1, 2020³ between Great River Hydro, the Project certifying authorities (including VTDEC and VTDFW), and other participating stakeholders. The MOU includes an Exhibit A “Great River Hydro’s Proposed Alternative Operation for the Projects” that is the basis of the proposed Project operation in the Wilder FLA. The Wilder FLA also included a proposed set of fish passage environmental measures that have since been incorporated into a Settlement Agreement on Fish Passage (SAFP) executed by the Vermont Department of Fish and Wildlife among other state and federal agencies and filed with the Commission on August 2, 2022⁴. This Water Quality Certificate application presents information collected and presented in Exhibit E and assumes future operations consistent with the Wilder FLA, MOU and SAFP. Exhibit E provides a full description of the proposed Project activity and is summarized below. Additional supporting information is provided in the ILP Water Quality Study 6 Updated Study Report dated 12-15-2016⁵ and ILP Fish Assemblage Study 10 Report dated 08-01-2016⁶.

The Wilder Project dam and powerhouse are located on the Connecticut River at river mile (RM) 217.4, approximately 1.5 miles upstream of the White River confluence and 7 miles downstream of the Ompompanoosuc River in the town of Hartford, Windsor County, Vermont, and in the city of Lebanon, Grafton County, New Hampshire. The Project consists of a rolled earthen embankment and earthen dike dam with a concrete gravity spillway; an approximate 45-mile impoundment; a powerhouse, a garage/service building, and buildings used for offices; fish passage facilities; and appurtenant facilities. The location of the project is shown in Figure 1 below.

¹ Accession Nos. 20201207-[5219 \(Public\)](#), - [5220 \(Privileged\)](#);-[5221 \(CEII\)](#); Amended Final License Applications of Great River Hydro, LLC for Bellows Falls Project, et. al. under P-1855 et. al.

² Accession No. [20230608-5103](#) Great River Hydro, LLC submits Revised Final License Application and Exhibits for the Bellows Falls Hydroelectric Project et. al. under P-1855 et. al. Includes composite Exhibit E for Wilder, Bellows Falls and Vernon Projects revised 06-07-2023.

³ Memorandum of Understanding between Great River Hydro and the United States Fish and Wildlife Service, the New Hampshire Department of Environmental Services, the New Hampshire Fish and Game Department, the Vermont Department of Environmental Conservation, the Vermont Department of Fish and Wildlife, The Nature Conservancy, and the Connecticut River Conservancy; filed with Vernon Project FLA Exhibit B of Amended Final License Applications of Great River Hydro, LLC for Bellows Falls Project, et. al. under P-1855 et. al. Accession Nos. 20201207-[5219 \(Public\)](#),

⁴ Accession No. [20220803-5124](#) Great River Hydro, LLC submits Offer of Settlement between Great River Hydro, LLC and the U.S. Department of Interior et. al, and Revisions to Exhibit D Documents for the Vernon Hydroelectric Project et, al. under P-1855, et. al.

⁵ Accession No. [20161215-5280](#) ILP Study Reports 6, 25 and 30, final reports and supplements, TransCanada Hydro Northeast Inc. under P-1892, et al filed December 15, 2016

⁶ Accession No. [20160801-5232](#) TransCanada Hydro Northeast Inc. August 1, 2016 Updated Study Report under P-1855, et. al.

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The dam is a concrete gravity structure extending across the Connecticut River from Hartford, Vermont, to Lebanon, New Hampshire. The dam structures include an earthen embankment that is about 400 feet (ft) long, a non-overflow gravity concrete bulkhead wall that is 232 ft long, a concrete forebay intake that is 208 ft long, a gravity concrete spillway that is about 526 ft long and 59 ft in maximum height, and another earthen embankment that is about 180 ft long. The south embankment is 13 ft in maximum height and the north embankment is primarily a natural bank to which protection has been added. The spillway portion of the dam is divided into four sections: skimmer gate, 6 tainter gates, 4 stanchion flashboards, and another skimmer gate. The various bays are separated by concrete piers supporting a steel and concrete bridge.

The Project impoundment extends upstream about 45 miles to a point about 4.0 miles below the Wells River-Woodsville Bridge. The Project has limited storage capacity because of the relatively flat terrain from the upper extent of the Project impoundment to the dam. The impoundment has a surface area of 3,100 acres and about 105 miles of shoreline and a total volume of 34,600 acre-feet (acre-ft) at elevation (El.) 385.07 ft at the top of the stanchion boards. The total usable storage amounts to about 13,350 acre-ft in 5 ft of drawdown to El. 380 ft.

The powerhouse contains three turbine generating units. Unit Nos. 1 and 2 are adjustable blade Kaplan units with a maximum hydraulic capacity of 6,000 cfs and minimum hydraulic capacity of 400 cfs. Unit No. 3 is a vertical Francis unit with a maximum hydraulic capacity of 700 cfs and a minimum hydraulic capacity of 400 cfs. At full load, with inflow equaling a maximum station discharge of at least 11,700 cfs, the Project has the capability of producing 43.4 megawatts (MW).

The Project also includes an upstream fish passage ladder and downstream fish passage through a surface spill gate, recreation facilities including a boat launch, portage, picnic areas, hiking trail, fish ladder viewing area, and fishing access. Plans and schedules for additional upstream and downstream passage enhancements are detailed in the SAFF.

The GRH proposal, as outlined in Exhibit B, reflects the proposed operation in accordance with the MOU. The proposed operation will predominantly maintain a specified water surface elevation (Target WSE) at the dam and, as a result, maintain flow below the Project equal to the approximate inflow as measured or calculated at the dam (inflow equals outflow or IEO). Specifically, a Target WSE of 384.5 ft m.s.l. (NVGD 29) will be maintained at the Wilder dam by passing inflow within a Target WSE Bandwidth between 385.0 ft and 384.0 ft to account for potential differences between anticipated inflow and actual instantaneous inflow. In addition to IEO Operation, the Project will have restricted discretionary Flexible Operation capability to respond to elevated energy prices as well as unrestricted capability to respond to emergencies and ISO-NE transmission and power system requirements.

In general, the proposed operational changes are anticipated to provide environmental benefits for aquatic life by creating more stable reservoir water surface elevations, reducing the magnitude of changes and the frequency of sub-daily changes in discharge from the project, increasing the amount of time that the project is operated as inflow equals outflow and at full reservoir. Apart from the proposed changes to the operational conditions, no new development or construction will be associated with the project other than fish passage related improvements outlined in Exhibit E reflecting the terms and conditions in the SAFF.

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Multiple water quality studies have been completed in the Wilder Project area in support of the FERC license application. Overall, these studies found current project operations are meeting Vermont water quality standards and it is expected this will not change under the proposed operational changes (Exhibit E sections 3.5.1.2, 3.5.2.2, 3.5.3.2, and 3.5.4.2 and ILP Study 6). Additionally, discretionary Flexible Operation generation is proposed for a limited number of hours each month (1.4 to 9% of the total hours in a month), with fewer hours in the April-October period and more in the late fall to early spring months. This schedule would protect critical aquatic resource sensitive months between April and September while allowing for more operational flexibility during less sensitive winter months when many aquatic resources are dormant (Exhibit E Section 3.3 and Section 3.6).

In the Wilder impoundment, specifically, pre-winter habitat operations will be implemented to reduce the likelihood of dewatering or freezing of DWM during their winter hibernation. This will be accomplished by maintaining WSEs near the lower limit of the proposed operational range for a period of time when water temperatures are dropping from 15° C to 10° C, a period when DWM are expected to be seeking overwintering habitat. Once water temperatures are consistently below 10° C, the Project will return to normal operations and will not drop WSEs below the pre-winter elevation during the remainder of the winter period (unless required to by flood profile operation) to ensure hibernating DWM remain submerged (Exhibit E Section 2.2.1).

Under the GRH proposal, current access to the river within the Project Boundary will be maintained or enhanced through the capital improvements to the boat launches, improved portage and general recreation area access and parking. The proposed operation will result in higher base flow conditions in the river that will more closely resemble natural flows, enhancing river paddling conditions while at the same time providing for stable impoundment water surface elevations that support power boating, flat water canoeing and rowing.

The proposed operation is anticipated to have an overall positive effect on whitewater boating at Sumner Falls, a quarter mile long rapid at a rocky complex that drops about 7 vertical feet over its course. Sumner Falls is about 9 miles downstream of the Project and as such is affected by the discharge from the station or dam, and significant tributaries such as the White River, Mascoma River, and Ottaquechee River. Under the proposed operation a base flow significantly higher than the current 700 cfs minimum flow will be maintained below the station. This combined with the contributions of downstream tributary inflow above the rapids will provide a continuous opportunity for whitewater boating at varying levels throughout the entire boating season. While there may be slightly fewer high peak discharges below Wilder station, the proposed operation does not exclude them. In general, greater than inflow flex hour related discharge from the Project (including up-ramping, flex hour and down-ramping flow) will occur when energy demand is high and when there is available natural flow (both inflow to the Project and downstream tributary flow) to support both discharge and the refill aspects of Flex Operation. These events will largely correspond with the type of high flow conditions that occur presently at Sumner Falls. Thus, as a result of the constant base flow, continuation of episodic higher-than-inflow conditions due to Flex Operation, and contributing inflow from downstream tributaries, a positive improvement for whitewater boating at Sumner Falls is anticipated.

Current in-stream wading angling will be the most affected change in current recreation use due to the proposed operation eliminating the 700 cfs minimum flow, in lieu of a higher, more naturalized flow below the station and dam. There are several locations where anglers are known to wade into the river

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to fish, or to reach exposed sandbars from which to fish. Safe opportunity for in-stream wading will likely be restricted to the riverbank unless assisted by flotation or boat. Combined with the anticipated improved aquatic resources, fishing conditions and opportunities should continue or improve under the proposed operation.

For all recreation in-stream users, anticipated and actual flow and discharge information below the Wilder Project will continue to be made available to the general public.

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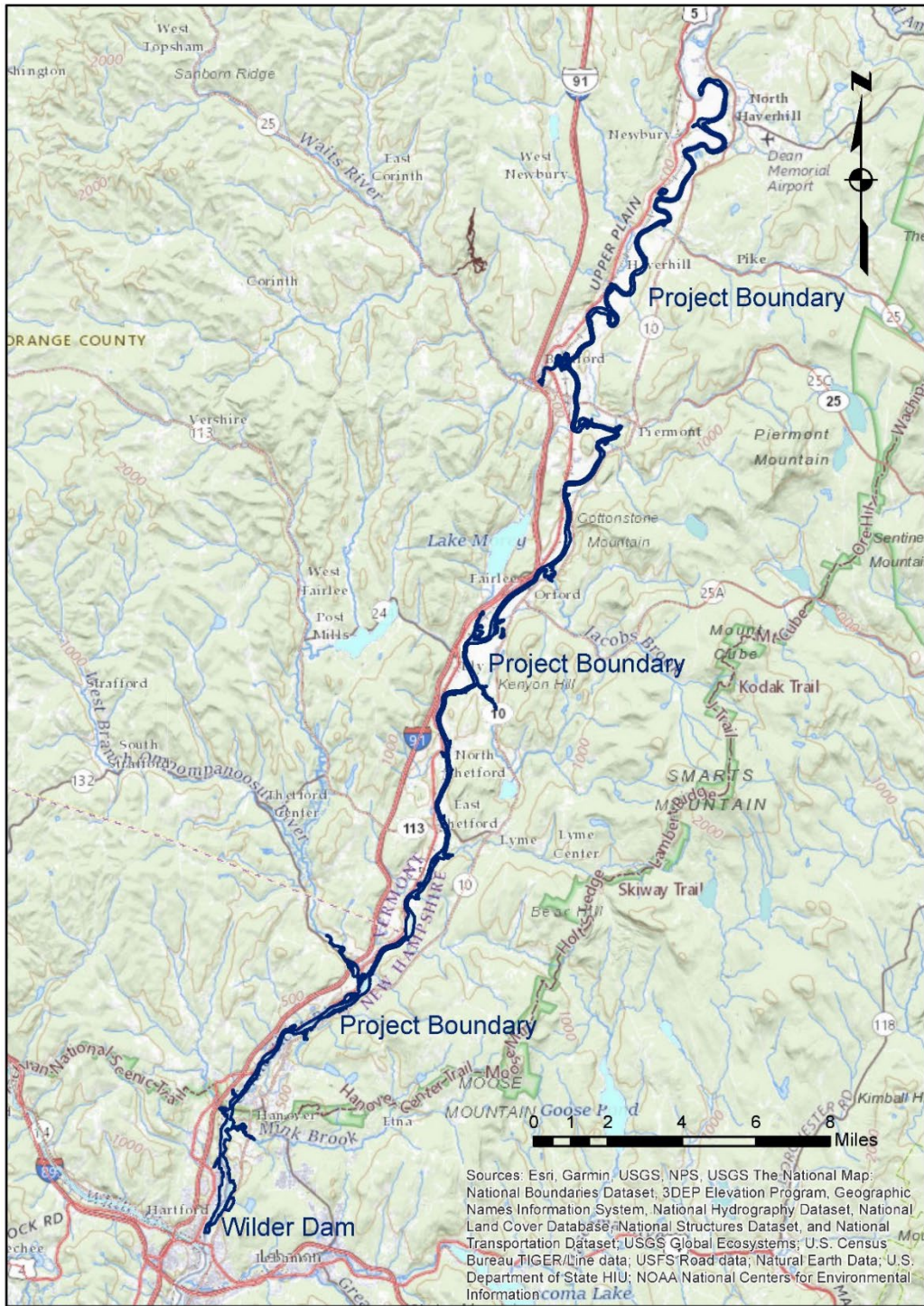


Figure 1. Location of Wilder Dam and Project Boundary

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5. List of Information Supporting Wilder Project VT WQC Application

The list below identifies the main sources of information supporting this WQC Application:

Amended Wilder FLA 12-7-2020 (Including Initial Statement and Exhibits A, B, C, D, F, G, and H):

Accession Nos. 20201207-[5219 \(Public\)](#), - [5220 \(Privileged\)](#);-[5221 \(CEII\)](#); Amended Final License Applications of Great River Hydro, LLC for Project, et. al. under P-1855 et. al.

GRH Website:

<https://relicensing.greatriverhydro.com/overview/documents/?eeFront=1&ee=1&eeFolder=Documents%2F80-Amended-Final-License-Applications-AFLA%2F10-Wilder&eeListID=1>

Revised Amended Exhibit E for Wilder, Bellows Falls and Vernon Projects; Revised 06-07-2023:

Accession No. [20230608-5103](#) Great River Hydro, LLC submits Revised Final License Application and Exhibits for the Bellows Falls Hydroelectric Project et. al. under P-1855 et. al

GRH Website: <http://relicensing.greatriverhydro.com/wp-content/uploads/simple-file-list/Documents/85-Revised-Final-License-Application-BF-Min-Flow-Unit/2023-06-07-WLDR-BF-VERN-RFLA-Exhibit-E.pdf>

Memorandum of Understanding executed December 1, 2020:

Included in 12-7-2020 FLA Exhibit B, Accession Nos. [20201207-5219](#) (Public) (see above). MOU between Great River Hydro and the United States Fish and Wildlife Service, the New Hampshire Department of Environmental Services, the New Hampshire Fish and Game Department, the Vermont Department of Environmental Conservation, the Vermont Department of Fish and Wildlife, The Nature Conservancy, and the Connecticut River Conservancy.

GRH Website: http://relicensing.greatriverhydro.com/wp-content/uploads/simple-file-list/Documents/80-Amended-Final-License-Applications-AFLA/10-Wilder/2020-12-07_WLDR_Amend_FLA_ExABCDGFH.pdf

Settlement Agreement on Fish Passage (SAFP) 08-02-2022:

Accession No. [20220803-5124](#). Settlement Agreement on Fish Passage (SAFP) executed by New Hampshire Fish and Game Department among other state and federal agencies and filed with the Commission on August 2, 2022.

GRH Website: <http://relicensing.greatriverhydro.com/wp-content/uploads/simple-file-list/Documents/80-Amended-Final-License-Applications-AFLA/70-AFLA-Settlement-Agreement-Fish-Passage/2022-08-02-GRH-AFLA-Fish-Passage-Settlement-Agreement.pdf>

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ILP Study 6 Water Quality Updated Study Report:

Accession No. [20161215-5280](#) ILP Study Reports 6, 25 and 30, final reports and supplements, TransCanada Hydro Northeast Inc. under P-1892, et al filed December 15, 2016

GRH Website:

<https://relicensing.greatriverhydro.com/overview/documents/?eeFront=1&ee=1&eeFolder=Documents%2F50-Study-Reports%2F130-Study-Reports-1-33%2FStudy-06-Water-Quality-Monitoring&eeListID=1>

ILP Study 10 Fish Assemblage Study Report:

Accession No. [20160801-5232](#) TransCanada Hydro Northeast Inc. August 1, 2016 Updated Study Report under P-1855, et. al.

GRH Website:

<https://relicensing.greatriverhydro.com/overview/documents/?eeFront=1&ee=1&eeFolder=Documents%2F50-Study-Reports%2F130-Study-Reports-1-33%2FStudy-10-Fish-Assemblage&eeListID=1>

All Final Study Reports for ILP Studies 1 through 33 can be found in the GRH Relicensing Public Information Library on the GRH Relicensing Website:

<https://relicensing.greatriverhydro.com/overview/documents/?eeFront=1&ee=1&eeListID=1&eeFolder=Documents/50-Study-Reports/130-Study-Reports-1-33>

Various Submittal Filings were made in order to submit all the final Study Reports to the FERC.

They can be accessed here:

<https://relicensing.greatriverhydro.com/overview/documents/?eeFront=1&ee=1&eeFolder=Documents%2F50-Study-Reports&eeListID=1>