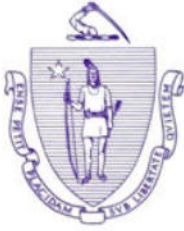


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COMMONWEALTH OF MASSACHUSETTS
THE GENERAL COURT
 STATE HOUSE, BOSTON 02133-1053

February 24, 2025

Commissioner Bonnie Heiple
 Attn: FirstLight 401WQC, MassDEP-BWR
 100 Cambridge Street, Suite 900
 Boston, Massachusetts 02114

Dear Commissioner Heiple,

We write as state legislators representing cities and towns along the Connecticut River and its tributaries which are affected by the relicensing of FirstLight Power's (FirstLight) Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain Pumped Storage Project (FERC No. 2485).

We know that MassDEP understands the significance of these projects to our constituents, the region, and the Commonwealth. We recognize the increased avenues for communication and input for the legislative delegation and our constituents, created through MassDEP's website dedicated to the relicensing, public information session, multiple opportunities for constituents to provide comments, an extension of this comment period from 21 to 30 days, as well as MassDEP's years of monthly meetings with members of the legislative delegation on this topic.

We are hearing significant concern from advocates and experts in the western Massachusetts region that MassDEP has not gone far enough to ensure that FirstLight's operations do not harm the river. They have told the delegation — and we understand they will submit comments to MassDEP — that the Draft 401 Water Quality Certification (WQC) **must include stronger conditions to enable the water quality standards to be met.** We urge you to listen again to these advocates' comments as many have been tracking this issue for decades.

As members of the western Massachusetts legislative delegation, we wish to share our own concerns regarding the Draft WQC which we ask you to consider as you prepare to issue the final document. These formal comments follow the delegation letter on the Amended Final License Application submitted by FirstLight and the Flows and Fish Passage and Recreation Settlement Agreements sent to the Federal Energy Regulatory Commission on May 1, 2024.

Impact of the recently passed clean energy legislation on Northfield Mountain

In November 2024, Governor Healey signed into law *An Act promoting a clean energy grid, advancing equity, and protecting ratepayers*. This legislation included a provision that amended the state's definition of "a clean energy generating source" to include pumped hydro storage power plants, like FirstLight's Northfield Mountain. The law also required a procurement of additional energy storage capacity, with existing energy storage facilities eligible for the procurement.

FirstLight stands to benefit considerably from this new law by becoming eligible for state procurements and clean energy incentives.

This new law could not have been considered in the modeling that has been done to assess the usage of FirstLight's Northfield Mountain into the future and the impact of its activities on the health of the Connecticut River. We ask that the projected usage and impact be reassessed and reconsidered using updated analyses given this new law prior to the conclusion of the WQC process. If we can reasonably expect greater use and impact given this new law, the protections must increase commensurately.

Presence of the Shortnose Sturgeon

As you know, a recent Connecticut River Conservancy study resulted in environmental DNA evidence of the presence of the Shortnose Sturgeon upstream of the Turners Falls Dam. MassDEP asserts in the Draft WQC that if correctly designed and operated, the upstream and downstream fish passage systems at Turners Falls Dam could benefit the Shortnose Sturgeon population. We ask that MassDEP take this one step further and require that the design of the Northfield Mountain Pumped Station barrier net meet the needs of the Shortnose Sturgeon in addition to all other fish species.

Timeline of the barrier net operation and overall fish passage improvements

We commend MassDEP for determining that the proposed schedule for FirstLight's installation of the barrier net was unnecessarily long. However we join the Connecticut River Conservancy (CRC) and ask that the barrier net be installed not later than three years into the license.

We also join CRC and other advocates to ask that MassDEP hasten the fish passage improvements.

Fish passage and protection of migratory fish species have been a top priority for environmental advocacy groups for decades, and this license itself is overdue with the previous license having expired in 2018.

Public involvement for the length of the license

Over the course of this license, we request that the WQC stipulate opportunities for meaningful local public input and oversight, particularly in the area of erosion mitigation, by the communities and entities which steward the river. This would include, but not be limited to, the Franklin Regional Council of Governments; CRC; the Conservation Commissions of Erving, Gill, Montague, and Northfield; and Indigenous stakeholders in the region.

In addition, while we applaud MassDEP's requirements of water quality monitoring for the life of the license, a Sediment Management Plan for those times when FirstLight dredges the upper reservoir at Northfield Mountain, and an Invasive Species Management Plan, we request that MassDEP add public comment periods to include public input throughout the development of these plans.

Closing

In closing, we are aware that a number of areas of strong concern to the legislative delegation are outside the purview of MassDEP through its 401 WQC process. These are:

1. A shortening of the length of the license given significant delays in the licensing process, the anticipated and unanticipated impacts of a rapidly changing climate, as well as rapidly-developing green technology;
2. The creation of a decommissioning fund to ensure that the public is not solely responsible for FirstLight's facilities should they become uneconomical for the company or obsolete;
3. The protection of historic and cultural areas of significance for Indigenous nations and the heeding of other requests by Indigenous stakeholders; and
4. A coordinated effort in the relicensing by FERC of the five projects along the Connecticut River in Vermont and New Hampshire that are being relicensed concurrently to mitigate the damage due to downstream flooding in the event of climate-related disasters.

Yet, we underscore these again because of the great importance we and our constituents place in each of these measures.

As you consider all the comments you have received on the WQC, please read them with the urgency that is shared in this moment when we and our constituents do not know if we can trust in the Federal Government's responsiveness to the pressing environmental needs of our time and the concerns that we have laid out above.

This is a moment for MassDEP to take a clear, bold, and decisive stand to protect the long-term health and local oversight over the Connecticut River and the protection of the species, communities, and economies that depend on it.



Jo Comerford
State Senator
*Hampshire, Franklin,
Worcester district*



Natalie Blais
State Representative
1st Franklin district



Mindy Domb
State Representative
3rd Hampshire district



The Commonwealth of Massachusetts

HOUSE OF REPRESENTATIVES
STATE HOUSE, BOSTON, MA 02133-1054

Richard M. Haggerty
STATE REPRESENTATIVE

30TH MIDDLESEX DISTRICT
WOBURN • READING
ROOM 26
TEL. (617) 722-2080
Richard.Haggerty@mahouse.gov

February 21, 2025

MassDEP
Attn: Elizabeth Stefanik, Clean Energy Support Teams
100 Cambridge Street, Suite 900
Boston, MA 02114

Sent via email: dep.hydro@mass.gov

To Whom it May Concern,

Please accept these comments which are intended to support Mass DEP's Draft 401 Water Quality Certification for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects. Together, these Projects play a critical role in delivering clean, local, cost-competitive power to communities across New England, while providing needed grid reliability to the region thanks to Northfield Mountain's fast response capability, long-duration, and large capacity of 1,168 MW.

FirstLight has been in an active relicensing process with FERC for these projects for over a decade and is nearing completion on the state-led phase, the 401 Water Quality Certification (401 WQC) process led by MassDEP. In the 401 WQC process, MassDEP is charged with determining whether there is reasonable assurance that the proposed relicensed operations will be conducted in a manner which will not violate Massachusetts Surface Water Quality Standards at 314 CMR 4.00. The Draft 401 WQC supports and further builds upon the significant benefits provided in the settlement agreements previously signed with over 18 stakeholders, including federal and state agencies. Those settlement agreements included over \$350 million in capital and operating commitments and foregone revenues that will advance the shared goal of a healthy Connecticut River with enhanced aquatic habitat and accessible recreation. This is a balanced proposal that supports a thriving Connecticut River, while allowing FirstLight's Projects to continue to deliver the critical clean energy generation and storage capabilities New England's energy transition demands. FirstLight currently operates the largest portfolio of renewable energy generation projects in New England, and the value of their Northfield Mountain cannot be overstated. Northfield Mountain's large capacity, long duration and fast response ability make it the most valuable tool ISO-NE has to balance the grid today and into the future as the volume of intermittent renewable energy in our grid mix grows.

FirstLight proudly partners with over 40 municipalities across New England, including the Reading Municipal Light Department in my district, providing clean, reliable, low-cost power to homes and businesses through power purchase agreements. In addition, FirstLight provides significant economic benefits to the local communities in Western Massachusetts and beyond, is a proud union employer and supports over 140 jobs in New England.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard M. Haggerty". The signature is fluid and cursive, with a long horizontal stroke at the end.

Richard M. Haggerty
State Representative
30th Middlesex District Woburn- Reading



The Commonwealth of Massachusetts

HOUSE OF REPRESENTATIVES
STATE HOUSE, BOSTON 02133-1054

BRADLEY H. JONES, JR.
STATE REPRESENTATIVE
MINORITY LEADER

20TH MIDDLESEX DISTRICT
READING • NORTH READING
LYNNFIELD • MIDDLETON

STATE HOUSE, ROOM 124
TEL: (617) 722-2100
Bradley.Jones@MAhouse.gov

February 24, 2025

Elizabeth Stefanik, MassDEP
Attn: FirstLight 401 WQC, MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114

To Whom it May Concern:

Please accept these comments which are intended to support Mass DEP's Draft 401 Water Quality Certification for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects. Together these Projects play a critical role in delivering clean, local, cost-competitive power to communities across New England, while providing needed grid reliability to the region thanks to Northfield Mountain's fast response capability, long-duration, and large capacity of 1,168 MW.

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Sincerely,

Bradley H. Jones, Jr.
Minority Leader



The Commonwealth of Massachusetts
SENATE MINORITY LEADER
 MASSACHUSETTS SENATE

SENATOR BRUCE E. TARR
First Essex and Middlesex

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February 24, 2025

Elizabeth Stefanik, MassDEP
 Attn: FirstLight 401 WQC, MassDEP-BWR
 100 Cambridge Street, Suite 900
 Boston, MA 02114.

Sent via email: dep.hydro@mass.gov


Re: FirstLight 401 WQC

Dear Elizabeth Stefanik,

Thank you for the opportunity to comment on the Massachusetts Department of Environmental Protection's Draft 401 Water Quality Certification (WQC) for FirstLight's hydroelectric facilities in Turners Falls (Turners Falls and Cabot), and its Northfield Mountain pumped storage projects. These projects and facilities combine to play a critical role in supplying clean, locally generated and cost - effective power to New England communities, with the important and added benefit of the grid reliability attributable to Northfield Mountain's capability for the fast- response, long-duration supply of some 1,168 MW of electricity. All of these attributes reflect the importance of licensure for these facilities, which in turn relies in significant part on the issuance of this water quality certification.

Since FirstLight has been pursuing licensure for these projects through the Federal Energy Regulatory Commission for over a decade, the timely issuance of the WQC is important not only to allow them to deliver their many benefits to Massachusetts and our region, but also to ensure that those benefits are delivered in an environmentally sound manner that does not violate the Surface Water Quality Standards contained in 310 CMR 4.00. Evidence of that compliance is abundant in the attendant settlement agreements signed by at least 18 stakeholders, including federal and state agencies, which reflect more than \$350 million in capital improvements and foregone revenues targeted directly at a healthy Connecticut river with enhanced aquatic habitat and robust recreational opportunities. These investments, coupled with the projects' tremendous capability to deliver the clean energy that is vital to our state's ambitious decarbonization goals, make a compelling case for the approval of the draft WQC and the necessary licensure from the FERC.

Accordingly, my hope is that you will give approval of the draft WQC, your strongest consideration. Thank you for your attention to my thoughts on this matter, and please do not hesitate to contact me if I may be of further assistance in the future.

Sincerely,


Bruce Tarr
State Senator



253 Pascoag Main Street
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Pascoag, RI 02859
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TTY via RI Relay: 711
Fax: 401-568-0066
www.crewri.org

10 February 2025

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Turners Falls Project No. 1889-085 FirstLight 401 WQC Comments

Dear Commissioner Heiple:

Clear River Electric & Water District offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) project.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Project will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy to future generations. Projects like Turner Falls and Cabot, play a critical role in delivering clean, local, cost-competitive power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix.

Clear River Electric & Water District has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, cost-competitive power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

This institution is prohibited from discriminating on the basis of race, color, national origin, sex (including gender identity and sexual orientation), disability, age, or reprisal or retaliation for prior civil rights activity. Clear River Electric & Water District is an equal opportunity provider and employer.



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Clear River Electric & Water District applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River and enables the Projects continued role in serving communities across New England that depend on FirstLight's clean electricity generation.


Sincerely,

A handwritten signature in black ink, appearing to read "William J. Guertin", is written over a light blue horizontal line.

William J. Guertin

General Manager/CEO

Clear River Electric & Water District



This institution is prohibited from discriminating on the basis of race, color, national origin, sex (including gender identity and sexual orientation), disability, age, or reprisal or retaliation for prior civil rights activity. Clear River Electric & Water District is an equal opportunity provider and employer.

February 19, 2025

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
FirstLight 401 WQC Comments

Dear Commissioner Heiple:

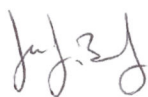
The Concord Municipal Light Plant offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations. Together, the Projects play a critical role in delivering clean, local, cost-competitive power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

The Concord Municipal Light Plant has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, cost-competitive power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

The Concord Municipal Light Plant applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River and enables the Projects continued role in serving communities across New England that depend on FirstLight's clean electricity generation.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Bulger", written in a cursive style.

Jason Bulger

Director

Concord Municipal Light Plant



February 24, 2025

Elizabeth Stefanik,
MassDEP Bureau of Water Resources
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071
Turners Falls Project No. 1889-085
Comments on FirstLight's 401 Draft Water Quality Certificate

Sent electronically via email to dep.hydro@mass.gov

Dear Ms. Stefanik and the MassDEP team,

The Franklin Regional Council of Governments (FRCOG) hereby submits comments on the January 24, 2025, draft 401 Water Quality Certification (WQC) for the Turners Falls Hydroelectric Project ("Turners Falls Project") owned by FirstLight MA Hydro LLC and Northfield Mountain Pumped Storage Project ("Northfield Mountain Project") owned by Northfield Mountain LLC. Collectively, we refer to the two facilities as "Projects" and the owner and operator as "FirstLight" or "Licensee." The issuance of a 401 WQC for the Projects is a critical step in this process that began over a decade ago when the FERC relicensing process started with the filing of the Pre-Application Document (PAD) on October 31, 2012. There is no existing 401 WQC for the projects and this 401 WQC will be in place for 50 years, a very long time.¹ Massachusetts Department of Environmental Protection (MassDEP) has broad authority under section 401 of the Clean Water Act to maintain or restore water quality to protect the existing and designated uses of the Connecticut River. It is critical that MassDEP issue a strong 401 WQC that will be relevant for operational patterns over many decades, and protective of habitat and water quality for the duration of the license.

FRCOG is a statutorily created regional service organization comprised of and serving the 26 municipalities of Franklin County, Massachusetts. The Connecticut River bisects Franklin County and is a major economic, recreational, and environmental resource for the residents of our member towns. For almost three decades, FRCOG (and its predecessor organization, the Franklin County Commission) and its Connecticut River Streambank Erosion Committee (CRSEC) have been actively involved with landowners and organizations concerned about the ongoing and extensive erosion in the Turners Falls Power Pool. The Federal Energy Regulatory Commission (FERC) recognized FRCOG's CRSEC in 1999 as an Ad Hoc Committee that would work with the power company to develop and

¹ We are aware that FERC can issue a license for a length of 30-50 years, and for the sake of brevity we are referring to the *proposed* license duration.

FRCOG Comments on the draft 401 WQC for FirstLight's Hydroelectric Projects
February 24, 2025

implement bioengineering bank stabilization projects pursuant to an Erosion Control Plan ordered and approved by the FERC.

FRCOG and municipalities in Franklin County have a significant stake in protecting the water quality of the Connecticut River and in ensuring that FirstLight's operation of the Projects meet water quality standards. Collectively, our communities have invested untold amounts of time and resources to protect and improve water quality through treating and managing stormwater and municipal wastewater, regulating the use of land, restoring habitat, and both regulating and educating our citizens to prevent pollution of the River. The Connecticut River is the lifeblood of our region and is vital to our economy and quality of life. We ask that MassDEP acknowledge and respect the role of local governments in protecting and improving the quality of the River in our corner of Massachusetts (particularly related to municipal wastewater treatment requirements), and to demonstrate the Commonwealth's shared commitment to the health of the Connecticut River by holding FirstLight accountable to operating the Projects in compliance with water quality standards.

Regulatory Framework

Massachusetts General Law (MGL) c. 21, §§ 26 through 53 charges MassDEP with the duty and responsibility to protect the public health and enhance the quality and value of the water resources of the Commonwealth. It directs MassDEP to take all action necessary or appropriate to secure to the Commonwealth the benefits of the federal Clean Water Act (CWA), 33 U.S.C. § 1251 et seq. The objective of 33 U.S.C. § 1251 et seq. is the restoration and maintenance of "the chemical, physical and biological integrity of the Nation's waters" 33 U.S.C. § 1251(a). To achieve the requirements, MassDEP has adopted the Massachusetts Surface Water Quality Standards that designate the most sensitive uses for which the various waters of the Commonwealth shall be enhanced, maintained and protected.

Under the Massachusetts Surface Water Quality Standards, 314 CMR 4.06, the Connecticut River from the Vermont, New Hampshire, and Massachusetts state line to the Turners Falls Dam is designated as a Class B warm water river. 314 CMR 4.05 (b) states that Class B "...waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation... These waters shall have consistently good aesthetic value."

Section 305(b) of the CWA requires states to assess waters with respect to their attainment of designated uses such as habitat for fish, other aquatic life and wildlife, fish and shellfish consumption, and primary (e.g., swimming) and secondary (e.g., boating) contact-recreation. Section 303(d) of the CWA requires states to identify those waterbodies that are not expected to meet surface water quality standards. MassDEP fulfills those obligations by preparing an "integrated" list of waters. In the Massachusetts Year 2022 Integrated List of Waters, there are three different segments that make up the Turners Falls impoundment (TFI). All three are listed as impaired, as follows:

- **Segment 34-01** is the 3.5-mile segment between the Vermont/New Hampshire/Massachusetts state line and the Route 10 bridge. This segment is listed as impaired for alteration in streamside or littoral vegetative covers, flow regime modification, and PCBs in fish tissue.
- **Segment 34-02** is the 11.4-mile segment between the Route 10 bridge and the Turners Falls Dam, excluding Barton Cove. This segment is listed as impaired for alteration in stream-side or littoral vegetative covers, flow regime modification, water chestnut, and PCBs in fish tissue.
- **Barton Cove is MA34-122**, a 160-acre cove of the Connecticut River upstream of the Turners Falls Dam, is listed as impaired for curly-leaf pondweed, Eurasian water milfoil (*Myriophyllum spicatum*), fanwort, water chestnut, *Escherichia coli* (*E. coli*), and PCBs in fish tissue.

Appendix 15 to the 2018-2020 Massachusetts Integrated List, which is the most recent detailed analysis of the attainment status for waters in the Connecticut River basin, states that these segments are “not supporting” the “Fish, other Aquatic Life and Wildlife Use” because of the impairments described above, listed in that document as “stream bank alteration,” and “flow modification.”

314 CMR 4.03(3)(b) states, “When the Department issues a 401 Water Quality Certification of an activity subject to licensing by the Federal Energy Regulatory Commission, flows shall be maintained or restored to protect existing and designated uses.” The designated uses that must be legally protected are “habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation.” Primary and secondary contact recreation includes swimming, fishing, and boating.

What is at Stake

The Connecticut River is the largest river system within New England and has offered sustenance to animals and humans for thousands of years. In 1947, the U.S. Geological Survey produced a paper in cooperation with the Commonwealth of Massachusetts Department of Public Works, looking at the geologic features of the Connecticut River valley in Massachusetts, relative to the floods of 1936 and 1938.² Though these devastating floods broke all flow records in Massachusetts, this report on page 2 stated that, “In the Connecticut Valley heavy, destructive river scour on fertile flood plains and terraces occurred at points of extraordinary floodwater concentration. *Strong bank erosion was confined to the outer margins of two bends; the stabilizing influence of vegetation was effective at all other places.*” (italics ours)

Northfield Mountain has been operating for the last 53 years, and the impacts on the Connecticut River and its banks in the TFI have been catastrophic. Gone are the terraces that were described in

² U.S. Geologic Survey, 1947. Geologic Features of the Connecticut Valley, Massachusetts as Related to Recent Floods. By Richard H. Jahns. Prepared in Cooperation with the Commonwealth of Massachusetts Department of Public Works. Online at <https://pubs.usgs.gov/wsp/0996/report.pdf>

FRCOG Comments on the draft 401 WQC for FirstLight's Hydroelectric Projects
February 24, 2025

1947. Trees have fallen and are actively falling into the river along the entire impoundment. Bank erosion is universally present, no matter whether at the inside or the outside of river bends. Banks have retreated in excess of 25 feet in places. Aquatic habitat has degraded and Barton Cove has filled with sediment.

Photos such as the two provided below, taken by the Connecticut River Conservancy in September of 2024, are illustrative of what is happening wherever there is no bedrock to prevent erosion: **erosion begins at the toe of the bank, where the water fluctuates every day or more than once day, and this leads to failure of the riverbank.**³

Figure 1. Photo taken by Connecticut River Conservancy in September 2024 on eastern bank at a location roughly 4,000 feet downstream of the Northfield Mountain tailrace. Note the exposed roots due to loss of bank material in the area that experiences daily river fluctuations.



³ Please refer to the Connecticut River Conservancy's comment letter on the draft 401 WQC for more photos of eroding river banks in 2024.

FRCOG Comments on the draft 401 WQC for FirstLight's Hydroelectric Projects
February 24, 2025

Figure 2. Photo taken by Connecticut River Conservancy in September 2024 on western bank at a location along Bennett Meadow downstream of the Route 10 Bridge. Note undercutting of toe of bank slope and progression of erosion cycle. Notching at the toe leads to bank slumping, loss of bank material and loss of mature riparian trees, and lateral retreat of the banks. Exposed soil and roots are visible at the top of the bank. All this is occurring despite the presence of a forested riparian area in this location.



Our concerns about this erosion were outlined in FRCOG's Motion to Intervene filed with FERC on April 11, 2024, and they include the following:

- Sedimentation
- Loss of aquatic and riparian habitat
- Loss of prime farmland
- Loss of traditional cultural properties and archaeological sites
- Destruction of natural resource areas
- Damage to repaired areas
- Impacts on recreation, municipal infrastructure, and our local economy

Summary of FRCOG's Concerns with the draft 401 WQC

Given the significant length of time that the license will be in place, the inability of the Commonwealth of Massachusetts to make changes for the duration of the license, and the impaired condition of the affected waters, FRCOG has substantial concerns with the draft 401 WQC. As noted by MassDEP, FirstLight has not provided the Department with sufficient information to determine whether its proposed operations will improve and then protect the quality of the Connecticut River. FRCOG appreciates that the draft 401 WQC, and related license conditions as proposed in the 2023 Flow and Fish Passage Settlement Agreement (FFP), will provide important improvements to water quality *below* Turners Falls dam. The 401 WQC as drafted will, however, allow FirstLight to continue to operate the Northfield Mountain Project in a manner that degrades the already impaired water quality above the dam in the Turners Falls impoundment (TFI) both downstream and upstream of FirstLight's pumped storage facility. Remarkably, the draft 401 WQC would allow FirstLight, largely at its own discretion, to fluctuate the levels of the impoundment well outside of the current typical operating levels – fluctuations that have already resulted in significant water quality impairment. Even more concerning, during certain instances, MassDEP proposes to *eliminate all limits*, which even FirstLight has not proposed. FRCOG asks that MassDEP impose operating conditions that significantly *reduce* fluctuations sufficient to ensure that water quality standards will be met in this 20-mile-long segment of the CT River.

We encourage MassDEP to exercise its basic mandate and revise the draft 401 WQC to ensure that operations of the Projects do not continue to cause erosion, and the sections of the river impacted by the two projects are restored, as necessary to ensure that MA WQS are attained and to meet the requirements of state and federal clean water laws.⁴ Most relevant to FRCOG's comments, and as noted on page 7 of the draft 401 WQC, is that FirstLight's current operations are causing or contributing to impairment of Massachusetts Surface Water Quality Standards ("SWQS") due to "Alteration in streamside or littoral vegetative covers" and "flow regime modification" in the segments of the Connecticut River most directly impacted by the operation of the Northfield Mountain Project. **MassDEP can and must do more than the conditions in this proposed water quality certification to address the causes of this impairment as necessary to ensure that the Massachusetts Surface Water Quality Standards are met.**

FRCOG has been involved in the relicensing of the two projects since 2013 and we submitted extensive comments on the 401 Water Quality Certification process on June 3, 2024. In those comments, FRCOG provided technical information from Dr. Evan Dethier clearly demonstrating project impacts on riverbank erosion, providing justification for limiting impoundment fluctuations. In this letter, we provide MassDEP with new information that, among other things, provides concrete suggestions for requiring modern monitoring technologies to avoid the bias and subjectivity that has plagued analysis of riverbanks and water quality for the past 30 years.

⁴ Massachusetts Clean Waters Act, M.G.L. c21, §§ 26-53; Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq.; and Massachusetts Surface Water Quality Standards, 314 CMR 4.00 et seq.

We are pleased that the draft 401 WQC included conditions related to our four primary recommendations, which are listed again below.

- ⊕ MassDEP's goal should be to bring Project operations into compliance with WQS and other appropriate requirements of state law and assure compliance over the license term.
- ⊕ License conditions must be set to bring the Projects into compliance. Reducing the range of river level fluctuations will reduce project impacts.
- ⊕ FirstLight should provide good stewardship of a vegetative riparian buffer the Connecticut River.
- ⊕ FirstLight should conduct and make public more and better monitoring of project operations and river conditions.

The draft 401WQC provides for good stewardship of riparian areas but falls short in addressing the other three recommendations. **Not only do the draft conditions not adequately address existing impairments, fail to reach attainment, and prevent further degradation, these draft conditions allow the impairments to persist over the next 50 years.** Further, the Special Conditions rely on many plans that have yet to be written and so require a leap of faith that these plans will be strong enough to bring about improvements. That is why we urge MassDEP to strengthen monitoring requirements to avoid the introduction of bias, and adopt modern technologies that can accurately track habitat and water quality trends.

Given these concerns, FRCOG is submitting detailed comments on several of the Special Conditions in the draft 401 WQC, and they center around three key points, as summarized below.

1. MassDEP can and must do more to ensure water quality standards are met.

Section 401 of the Clean Water Act gives the Commonwealth of Massachusetts both the authority and responsibility to protect a public trust, the Connecticut River. MassDEP should only certify these projects as meeting water quality standards if the projects can, if operated under the conditions of the certification, actually meet water quality standards. It is not sufficient to limit the conditions such that the new license maintains the status quo or allows TFI fluctuations with greater frequency and/or intensity. MassDEP has not demonstrated that water quality conditions can be met and appears to contemplate the likelihood that water fluctuations will increase. This is unacceptable and must be changed in the final 401 WQC.

Our comments on the following Special Conditions fall under this key point:

- Special Condition 10 – TFI water level management
- Special Condition 26 – Water quality monitoring
- Special Condition 27 – Invasive Species Management Plan

2. Quality Assurance Project Plans must ensure scientific rigor and encourage modern monitoring technologies.

We applaud MassDEP's monitoring requirements to look at trends in erosion, water quality and sediment management over the license term. FRCOG offers specific recommendations related to the erosion monitoring QAPP in order to ensure that project impacts, or

improvements, are adequately documented. We recommend the development of new QAPPs that are regularly updated and include 1) the use of modern technology and scientifically sound and replicable methodologies, 2) precise definitions, and 3) clear decision matrices. Flawed erosion survey methods from the 2013 QAPP for the Full River Reconnaissance, for example, should not be used. Our comments on the following Special Conditions fall under this key point:

- Special Condition 25 – Erosion Monitoring Plan
- Special Condition 26 – Water quality monitoring
- Special Condition 30 – Sediment Management Plan

3. MassDEP must allow public access to required plans and reports, and recognize the input of members of the public and the Connecticut River Streambank Erosion Committee.

Most of the progress on bank stabilization and protection has happened because of the people who live and work along the river on a regular basis and have long been involved in observing the operations of Northfield Mountain Pumped Storage Project. MassDEP will benefit by allowing public comment periods for the plans it requires and reviews. Final plans and required reports must be publicly posted so that individuals and organizations do not have to repeatedly file Freedom of Information Act (FOIA) requests. Additionally, the Connecticut River Streambank Erosion Committee (CRSEC) is an ad hoc group that has been involved for more than 25 years, and its members are interested in continuing its collaborative role. MassDEP and FERC should continue to recognize this group. Our comments on the following Special Conditions fall under this key point:

- Special Condition 8 – Flood Flow Operations
- Special Condition 12 – TFI impoundment reports
- Special Condition 25 – Erosion Mitigation, Stabilization, and Monitoring
- Special Condition 26 – Water Quality monitoring
- Special Condition 27 – Invasive Species Plan
- Special Condition 28 – Riparian Management Plan
- Special Condition 30 – Sediment Management Plan

Detailed Comments on Draft 401 Conditions

FRCOG's comments filed in this letter and its attachments focus on the issue of streambank erosion and the connection to Massachusetts Surface Water Quality Standards. We include a memorandum as Attachment A, prepared by Princeton Hydro and addressed to the Connecticut River Conservancy. CRC contracted with Princeton Hydro to review technical elements of the draft 401 Water Quality Certificate related to erosion. Funding for this contract was provided by the CRC, FRCOG, and the towns of Gill, Northfield, and Montague.

Below, we list our comments and recommendations by Special Condition of the draft 401 WQC.

Special Condition 8: Flood Flow Operations

Special Condition 8 requires the Licensee to operate the Project “in accordance with its existing agreement with the U.S. Army Corps of Engineers (USACE).” This agreement with the Army Corps has repeatedly been mentioned in relicensing documents, but the agreement itself has never been appended and available to the public. This leaves MassDEP in a precarious position with a special condition that is unknown and unenforceable.⁵

This comment also relates to Key Point #3, the need for full public engagement and transparency.

Recommendation for Special Condition 8

FRCOG recommends either attaching the USACE agreement to the final 401 WQC or writing in the actual conditions to clearly denote what part of the flood operations are actual 401 conditions.

Special Condition 10: Turners Falls Impoundment Water Level Management

Special Condition 10 proposes to amend FirstLight's Proposed Article A190. Whereas FirstLight proposed to continue to be able to fluctuate the impoundment between 176 and 185 feet as measured at the Turners Falls Dam, MassDEP proposes a requirement to maintain water levels between 178.5 and 185 feet, except under discretionary and nondiscretionary circumstances. Combined, these exceptions swallow the rule and allow FirstLight to increase the level of impoundment fluctuations beyond their current operations, which are already known to be causing water quality impairments. The nondiscretionary circumstances remove an absolute operating range limit and are particularly worrisome.

MassDEP has sidestepped erosion-related impairments in this Special Condition, despite listed impairments, more than four decades of advocacy around Northfield Mountain's erosion impacts, and numerous peer reviews of the work of consultants hired by the licensee.

MassDEP's proposed condition would allow FirstLight to violate the surface water quality standards including the anti-degradation provisions and to further degrade the Connecticut River.

FRCOG supports limits placed on impoundment water level management, but MassDEP has not demonstrated that operations under the proposed Special Condition will meet water quality

⁵ Page 66615 of the 401 Rule Preamble states, “However, for certifications with conditions, it is important to clearly indicate what information is merely background or supplementary information as opposed to the actual conditions that must be incorporated into the Federal license or permit. For example, when EPA acts as the certifying authority it clearly denotes which aspects of the certification with conditions are general information versus the actual certification conditions. Clearly parsing out this information in the decision document ensures project proponents are best positioned to understand and comply with certification conditions . . . ”

standards. In fact, FRCOG believes the conditions will do little to safeguard water quality and may further degrade water quality.

MassDEP determined that “the entire Massachusetts part of the river upstream of the Turners Falls Dam is listed as impaired” as described in the draft 401 WQC.⁶ The causes of the impairment include the alteration in streamside or littoral vegetative cover and flow regime modification.⁷ FirstLight's operation of the Northfield Mountain Project is the primary cause of these impairments.⁸

Given this context, FirstLight has the burden of showing that its operation will not violate water quality standards. Yet, FirstLight has not met its burden, but instead has provided inadequate information in support of its application for a 401 WQC, as described in FRCOG's initial comments. MassDEP correctly concluded that,

“FirstLight failed to provide sufficient information for MassDEP to determine that operating in the range of 176-179 without sufficient limitations would comply with the SWQS”,

...

“FirstLight failed to provide sufficient information to determine that allowing unlimited impoundment levels in the full range of 176-179 feet would comply with the anti-degradation rule”,

...

“Using the full range of 176-179 without limitations would decrease flows in the [Turners Falls Impoundment], leaving expanses of land under water exposed, and would not protect existing and designated uses such as aquatic life and its habitat and water-related recreation. FirstLight failed to present any evidence to the contrary,”

and

“The alterations caused by unlimited fluctuations between 176-179 would likely adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, and adversely affect populations of nonmobile or sessile benthic organisms. FirstLight failed to present any evidence to the contrary,...”

Draft 401 WQC at pages 25-27.

Similarly, FirstLight did not provide any information in its application, and no finding is provided in the draft 401 WQC, supporting a determination that this amount of impoundment variability is necessary and unavoidable.

⁶ Water Quality Certification with Conditions First Light Hydroelectric Project FERC License Nos. 1889 (Turners Falls) 2485 (Northfield Mountain) (DRAFT-1-24-25) at pages 7-8.

⁷ Id.

⁸ See Section 2 of “Review of Erosion in the Turners Falls Impoundment” prepared by Dr. Evan Dethier, submitted together with FRCOG's June 3, 2024, comments.

Despite these conclusions, MassDEP decided to only limit excursions below 178.5 ft, and did not explain how this limit will comply with the SWQS. In the absence of sufficient information from FirstLight, MassDEP has only two options:

1. deny the 401 WQC and require FirstLight to submit the information that the department needs to ensure compliance with SWQS; or
2. include stringent operational requirements with a sufficient margin of safety to ensure that the fluctuations will not continue to contribute to erosion and impairment of the Connecticut River as necessary to address the causes of the current impairments, reach attainment (as evidenced by comprehensive and scientifically defensible monitoring), and protect uses for the next 50 years.

To obtain the benefits of an updated FERC license with new conditions, FRCOG encourages MassDEP to take the second option. **As currently written, Special Condition 10 does not, however, provide the level of operational limits necessary for the Turners Falls impoundment to meet surface water quality standards.** For instance, if MassDEP has determined that elevations below 178.5 ft are detrimental to existing uses of the Connecticut River, there should be no reason to have discretionary events at all. **Meeting water quality standards should not be optional.** Moreover, the discretionary events, if used to the maximum extent, add up to 420 hours (4.7% hours in a year), which would allow incursions into this low range *more than double* the amount of time they have been under current conditions.⁹

FRCOG agrees that there may be nondiscretionary events requiring deviations – we incorporated such a concept in our June 3, 2024, comments. MassDEP's proposed conditions, however, are particularly dangerous -- they **do not include a lower or upper limit at all.** During these nondiscretionary events, MassDEP proposes conditions in which the licensee "could deviate from the operating range of 178.5-185." This language includes no mention of a floor or ceiling for water surface elevations during these nondiscretionary events. FRCOG recommended in our June 3, 2024, comments an allowed range of 179-184 feet as measured at the dam, and FL has requested a range of 176-185 feet.

FRCOG also notes that typical fluctuation patterns associated with current project operations are important drivers of erosion, causing the river segments above the dam to not meet aquatic life uses.¹⁰ Daily operations include fluctuations that can range over 4.8 feet, but more typically range 1.2 to 1.6 feet, measured at Turners Falls Dam. MassDEP included two figures in Appendix B of the draft 401 WQC, showing current and proposed future conditions (FFP Settlement

⁹ Page 25 of the draft WQS cites a FirstLight study that states that "For existing operations, FirstLight operates at or above 178.8 feet approximately 98% of the time."

¹⁰ See Appendix 15 to the 2018-2020 Massachusetts Integrated List of Waters, page 22, which said "Aquatic Life Use of this Connecticut River AU (MA34-01) will continue to be assessed as Not Supporting. Although the water quality data collected were indicative of good conditions the historical impairments 'flow modification' and 'stream bank alteration' due to issues with bank erosion and the operation of multiple hydroelectric generating facilities along the Connecticut River are being carried forward."

Agreement). These graphs, which did not include a date range or information about whether existing conditions were modeled or actual values, do not show typical daily fluctuation ranges, only the mean and extreme high and low frequencies by month. Our comments dated June 3, 2024, on pages 8 and 22 recommended **a stepped approach based on what we know of actual operational patterns**. FRCOG's recommendations were based on actual, measured impoundment patterns as reported by FirstLight, not modeled results for a range of years that is not representative of the current climate patterns or the presence of Northfield Mountain.¹¹

Typical operations are having an effect on erosion – the notching and undercutting of the bank toe at the water line instigates the sequence of erosion illustrated in Figure 30 of Field Geology's 2007 report on the TFI, included as Attachment B to this letter.¹² Notching or undercutting destabilizes the entire bank, resulting in lateral and vertical bank retreat and significant sediment loading to the river. See also Recommendation 20 in Princeton Hydro's peer review of Study 3.1.2 dated December 16, 2016.¹³

MassDEP appears to have also concluded that FirstLight's proposed operating conditions will allow an increase in the fluctuations of the Turners Falls Impoundment levels. On page 22 of the Narrative, MassDEP explains that there is a small occurrence of the state-listed plant, the tufted hairgrass, in the TFI, but "MassWildlife does not anticipate long-term persistence of this subpopulation **under the anticipated increase in impoundment variability** needed to help FirstLight naturalize flows downstream of Cabot Station." (emphasis ours) While in the course of negotiating the FFP Settlement Agreement, MassWildlife may have been comfortable trading off the survival of this plant for improvements downstream of the dam, but MassDEP may not allow FirstLight to increase the impoundment variability and continue to degrade water quality, in violation of the SWQS.

By focusing only on a recreational use impairment under low impoundment conditions in their Appendices C, D, and E and justification for this Special Condition, MassDEP left the impairment of the aquatic life use unaddressed.

The SWQS, and particularly the anti-degradation provisions of 314 CMR 4.04, require protection of all existing and designated uses of water bodies, and maintenance of the level of water quality needed to protect those uses. MassDEP's proposed Special Condition 10 fails to protect existing and designated uses because it does not protect against extreme Turners Falls Impoundment (TFI) variability or regular sub daily fluctuations, both of which lead to bank instability and erosion-related impairments.

¹¹ According to personal communication to FRCOG from FirstLight's consultants dated 2/19/2025, Appendix B to the draft 401 WQC includes modeled results for the period 1962-2003.

¹² Field Geology Services, 2007. Fluvial Geomorphology Study of the Turners Falls Pool on the Connecticut River Between Turners Falls, MA and Vernon, VT. Prepared for Northfield Mountain Pumped Storage Project by Field Geology Services, Farmington ME, November 2007.

¹³ This letter was part of **Attachment 3** to FRCOG's comments submitted to MassDEP on June 3, 2024.

Impoundment fluctuation restrictions are necessary

Operation of the Northfield Mountain pumped storage project during the current FERC license has caused or contributed to the current listed impairments of “alteration in streamside or littoral vegetative covers” and “flow regime modification” in the Connecticut River segments 34-01 and 34-02. During this time, while water surface elevations lower than 178.5 ft at the dam have been rare (less than 2% of the time), fluctuations in the range of 1 to 3 feet as measured at the dam have been happening on a sub daily and daily basis. This operation pattern has contributed to a lack of vegetation in this fluctuation zone, leading to notching at the toe (bottom) of the bank and increased rates of erosion. The 1979 Army Corps report recognized that limiting pool fluctuations and encouraging growth of vegetation on the banks could reduce the bank erosion problems.¹⁴ The 401 WQC and new FERC license represent the first opportunity to address this problem since 1968. The conditions MassDEP has drafted will not limit a wider typical daily range of fluctuations, and the impairments could get worse.

In Appendix B of the draft 401 WQC, modeled FFP conditions appear to show that the median impoundment levels will be 1 foot higher in the months of April, May, July, and August, and 1 foot lower in September than under modeled “current conditions.” A fluctuation zone centered around a different elevation than the patterns established during the first 50 years of project operations could lead to an increase instability. As noted by our consultant Dr. Evan Dethier, on page 8 of his report appended to our June 3, 2024, comment letter, increased water saturation due to reservoir inundation can enhance erosion processes. Changes in average water levels will change the area of riverbank currently subject to cycles of wetting (saturation) and drying (water draining out of the soil column) increasing bank instability and bank erosion. When the dam was raised and the pumped storage facility brought online in 1972, the river had a catastrophic response, with thousands of feet of bank eroded. A similar response should be expected if a new “shock” to the system is allowed.

FRCOG's comments filed on June 3, 2024, expressed concern about future conditions that may affect operations and operational patterns at Northfield Mountain. In November of 2024, Governor Maura Healey signed a sweeping new climate law that includes a provision for long term contracts for storage, allowing existing storage facilities to be included.¹⁵ This may incentivize the operation of Northfield Mountain even when energy prices are not competitive, thereby causing Northfield Mountain to operate more than it has been during the period modeled for the relicensing studies.

As we have been participating in relicensing, we have attempted to understand current operational patterns and proposed (likely) patterns. The licensing documents have been based on different data sets that are not comparable to one another and make it difficult to understand

¹⁴ Page v of Connecticut River Streambank Erosion Study: Massachusetts, New Hampshire, and Vermont. Prepared by D. B. Simons et al. for the U.S. Army Corps of Engineers, 1979. Contract No. DACW 33-78-C-0297.

¹⁵ [An Act promoting a clean energy grid, advancing equity, and protecting ratepayers](#). See Section 98 for storage procurement.

current vs. proposed conditions. Moreover, as described in the previous paragraph, we believe any attempts to predict future patterns are likely inaccurate because of climate change and a changing electric market. Through communication with FirstLight's consultants, we have learned that the graphs in Appendix B in the draft 401 WQC are based on modeled hourly data for a period 1962-2003 under baseline (existing modeled) conditions and under the Flows and Fish Passage Settlement Agreement conditions.¹⁶ The BSTEM modeling results, on the other hand, represent modeled baseline (existing) conditions and FFP conditions from 2000-2014. Data provided in the Pre-Application Document (PAD) and other relicensing study reports presented actual conditions. All of this uncertainly reinforces our opinion that strict operational controls based on what we know about actual (not modeled) conditions are essential in the 401 WQC.

Setting license terms for impoundment levels at a single location is not adequate

Measuring water surface elevations (WSEs) at a single location, at the dam, has been a major problem in the existing license. There is no need to continue using this flawed approach for the next 50 years. Equally important is how other locations in the TFI upstream of the French King Gorge react to fluctuations, sometimes more severely.

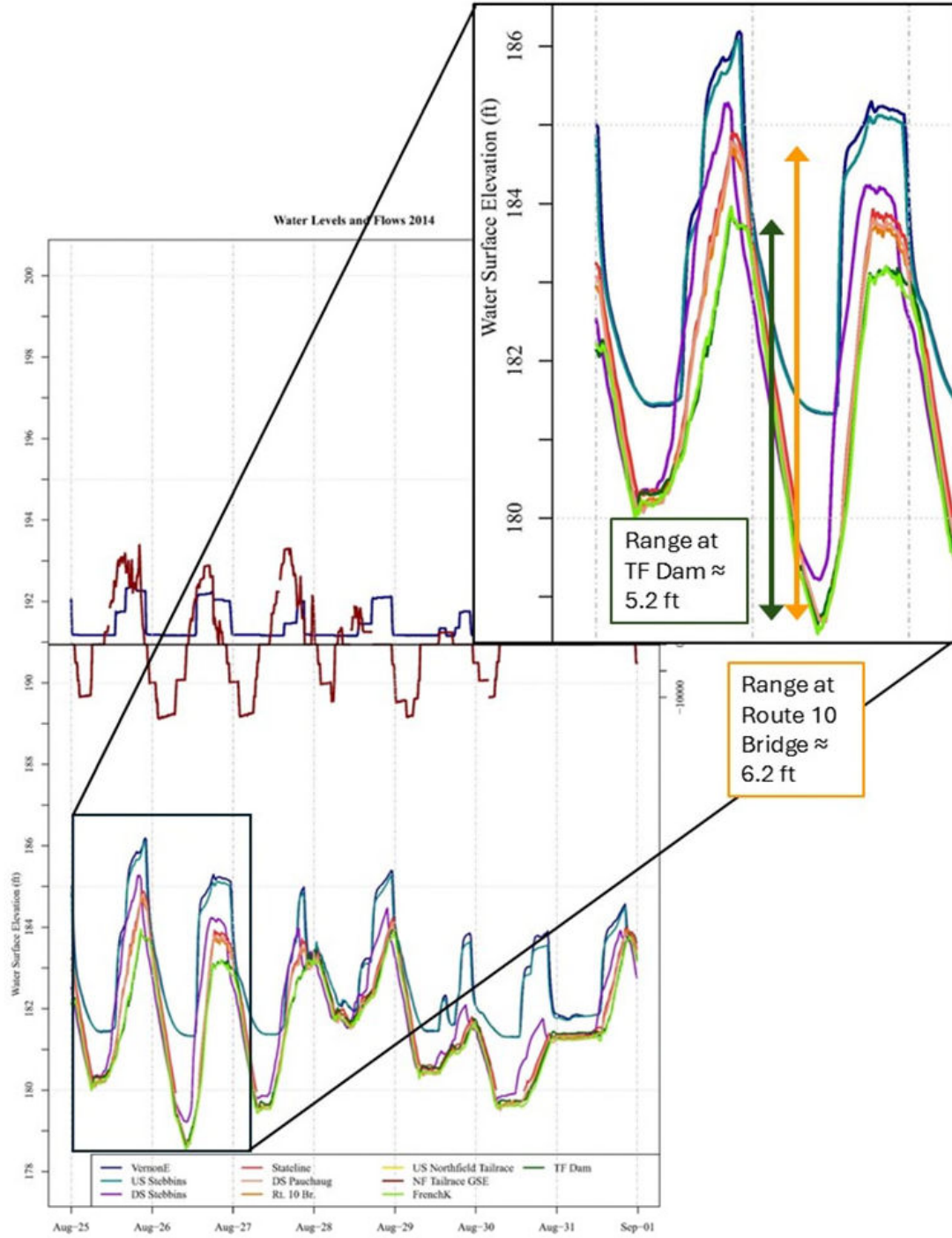
FRCOG adds here an important point of clarification regarding MassDEP's statement on page 26 of the draft Narrative: *the Turners Falls Dam location does not represent the location where fluctuations are the most extreme*. On page 26 of the draft Narrative, MassDEP says that Saco Lane in Gill, six miles upstream of the Dam is "where the impacts of drawdowns should be less than impacts at points close to the dam, such as Barton Cove." Relicensing Study Report 3.2.2, the Hydraulic Study, demonstrated this assumption to be false. **Locations upstream of the Northfield Mountain tailrace, downstream of the MA-VT-NH state line, can experience wider daily fluctuation ranges in a 24-hour period than at the dam.**

The Turners Falls Dam, after all, has several ways to control river levels: a gatehouse that sends water into the power canal, bascule gates, and Tainter gates. There are no such controls upstream, where Northfield Mountain withdraws and then discharge enormous amounts of water, often in excess of the flow of the mainstem river. A figure taken from page 171 of Study Report 3.2.2 shows, for example and shown below as Figure 3, river levels at various loggers in August of 2014. **The logger at the dam showed a 5.2-foot drop in water surface elevation overnight on August 25-26, 2014, whereas the logger at the Route 10 bridge in Northfield showed a 6.2-foot drop during the same period.** Both loggers recorded a low elevation of approximately 178.5 ft, despite the Route 10 bridge being located almost 11 miles upstream and therefore starting at a higher elevation.

¹⁶ Northfield Mountain came online in 1972, so the model represents a fictional scenario that assumed the facility was operating during the flow conditions of that time.

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Figure 3. Page 171 from relicensing Study 3.2.2, with August 25-27, 2014, time period zoomed in and fluctuation range emphasized.



Recommendations for Special Condition 10

1. Unless MassDEP chooses to deny a 401 Water Quality Certificate to the Northfield Mountain Pumped Storage Project, FRCOG believes **the only way to bring Northfield Mountain's operations into compliance with water quality standards would be to limit water surface elevation fluctuation patterns**. Our June 3, 2024, comments explained our concept of a **target elevation and target bandwidth (based on actual conditions), as measured both at the Turners Falls Dam and the USGS gage at the Route 10 bridge in Northfield**. We refer to our original recommendations.
2. FRCOG's June 3, 2024, recommendations included two locations to measure compliance with impoundment fluctuation limits. FRCOG continues to stress the importance of establishing two points, and for this reason we emphasize that funding for the USGS gage location at the Route 10 bridge is critical for understanding fluctuation patterns in the next license period.

Special Condition 12: Flow Notification and Website

FRCOG supports MassDEP's additional requirement of part (d), which requires quarterly reports regarding operational data, and part (e), which requires an annual report detailing impoundment fluctuation extremes. MassDEP did not specify to whom FirstLight will provide these quarterly reports. FRCOG recommends that these reports be posted so that the public will not have to repeatedly request access via the Freedom of Information Act (FOIA).

Recommendations for Special Condition 12

FRCOG offers the following recommended edits to tighten up the requirement. Suggested new text is underlined; no change is proposed to the rest of this Special Condition after the second bullet.

(d) For the life of the license, quarterly reports will be submitted to MassDEP, FERC, and the CRSEC, by the end of the second month following each quarter that include data concerning the following:

- Continuous hydrographs showing hourly impoundment levels for three locations: the Turners Falls Dam, the Northfield Mountain tailrace, and the USGS gage at the Route 10 bridge. The hydrographs will show the three locations superimposed on the same graph with the elevation shown in feet on the x-axis and the hour and date on the y-axis.
- Weekly and monthly statistics on the impoundment levels in feet mean sea level as measured at the Turners Falls Dam and at the USGS gage located at the Route 10 bridge, as follows: average impoundment elevation with standard deviations; median impoundment level; maximum elevation; minimum elevation; average daily elevation change with standard deviations; number of elevation changes that exceed 2 feet/day; average and maximum rates of change in elevation, both increases and decreases; and average number of hours impoundment level rises vs. falls.

Special Condition 25: Erosion, Mitigation, Stabilization and Monitoring

MassDEP proposes to include a requirement of an Erosion Mitigation, Stabilization, and Monitoring Plan as outlined in Appendix F of the draft 401 WQC. FRCOG supports the inclusion of a requirement that the Licensee prepare and carry out efforts to monitor, mitigate, and stabilize riverbank erosion. Though the basic ideas of many of FRCOG's recommendations in our comment letter dated June 3, 2024, were adopted, we caution that without clear requirements in the 401, bringing the project into compliance will be hindered by the same lack of data that has plagued this work for the last 50 years.

We stress to MassDEP that the effectiveness of this requirement will be in the details. Monitoring efforts should be scientifically rigorous, defensible, and replicable. Monitoring should be strong enough to be able to understand trends through the life of the next license and to inform decisions on bank repair and stabilization and to improve water quality. Our comments and recommendations in this section are geared to making this Special Condition more scientifically sound and effective.

Repair of Eroded Banks

MassDEP includes a requirement for FirstLight to repair sites described in Table D-1 within 6 years of license issuance.¹⁷ By the time the license is issued, the project will have operated for 60 years with no 401 WQC. Requiring approximately 1,000 feet of bank repair (667 ft of new sites and 429 ft of previously stabilized sites) in 6 years, after what has been effectively a 10-year license extension, is inadequate. The licensee should be able to complete this work in 2 years given they will have ample time to prepare designs after the final 401 WQC is issued. MassDEP could refer to years of project compliance reports for the current FERC license to see the length of and schedule for bank stabilization projects that the licensee had been able to achieve in the past.

Table D-1 does not indicate whether the bank described is on the east (river left) or west (river right) bank, but it appears that DEP has chosen the segments that were identified as having "extensive" erosion in the 2013 Full River Reconnaissance (FRR) report.

FRCOG cautions against relying on these FRR designations as an indicator of what banks were eroding in 2013, and this caution also relates to using these same methods for future assessments and decisions about bank repair. We refer to the letter prepared by the Connecticut River Streambank Erosion Committee dated November 14, 2014, that was included as FRCOG's attachment 11 to our June 3, 2024, comments to MassDEP. Please note comments 3, 4, and 5 of that letter especially. A relevant portion of that letter is copied again here below in italics. The key reason for copying this excerpt is to stress that **the amount of eroding banks in 2013 far exceeded the 667 feet of new sites that MassDEP is proposing the licensee stabilize in the first**

¹⁷ We note that possibly this Table should be named F-1, since it is within Appendix F.

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six years of the license. As you will see in the photos below, segments of bank classified as having "little/none" erosion were in fact exhibiting severe erosion in photos .

..."many areas of erosion were missed, and some were incorrectly categorized. Some examples of areas that were missed are shown below.



*Cropped version of FirstLight photo DSC_1164. Shot November 2013. Located along segment 513, classified as **none/little** extent of erosion.*



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*Cropped version of FirstLight photo DSC_1192. Shot November 2013. Located along segment 515, classified as **none/little** extent of erosion.*



*Cropped version of FirstLight photo DSC_1203. Shot November 2013. Located along segment 515, classified as **none/little** extent of erosion.*

...

It is clear to us that splitting the riverbank into segments based on features other than erosion observations and then assessing the overall erosion in each segment is not a way to truly identify the extent of erosion along the banks. Therefore, the percentage numbers in 2013 and 2008 are meaningless, and in reality, using their methodology, no determination can be made about the extent of erosion and whether or not the riverbanks are getting more or less eroded over time. “

Erosion Monitoring

MassDEP proposes to require an **Erosion Control Monitoring Plan** to be developed within one year of license issuance, and after consulting with MassDEP. There are two main components of the Erosion Control Monitoring Plan. MassDEP proposes to require **Erosion Monitoring Surveys** in years 2, 10, and 30. The surveys are required, at a minimum, to comply with the 2013 QAPP and must include a boat-based survey and delineation of bank features, with a report due to MassDEP in the first quarter of the year following the survey. MassDEP also proposes to require **boat-based inspections** in the TFI in years 4, 6, 8, 12, 15, 25, 35, and 45. This survey will include visual observation with geo-referenced video recordings and a summary memorandum, along with a repair and maintenance plan for sites requiring repair and preventative maintenance.

Public review and input should be incorporated

Throughout Appendix F, an important component is lacking: input from the public, from the Connecticut River Streambank Erosion Committee and its members, and Conservation Commissions of Gill, Northfield, and Montague. The 1999 Erosion Control Plan came about only after years of local advocacy and many meetings coordinated by FRCOG's predecessor organization, the Franklin County Commission. All projects completed under the 1999 Erosion Control Plan until 2013 when relicensing began were done with consultation and input from the Connecticut River Streambank Erosion Committee (CRSEC) and several were supported by funding secured by the FRCOG from MassDEP's s.319 Nonpoint Source Pollution grant program. This group, as well as residents who live along the river, are the eyes and ears of the Connecticut River, and MassDEP's work with the licensee into the next license will be enhanced by ideas and input from the public who care so deeply about the River. We recommend that a review committee that includes CRSEC be established and incorporated into the 401 WQC to oversee all parts of this Special Condition.

A new QAPP must be prepared and should be regularly updated

FRCOG is supportive of the requirement of a QAPP to be approved by MassDEP; in fact, we long requested that a QAPP be prepared to eliminate bias and require replicable methods for conducting the previous FRRs. **We recommend MassDEP require a new QAPP and updates of this QAPP be completed at least every 10 years.** We are not supportive of using the 2013 QAPP for the initial survey in year 2. We need to break the cycle of inadequate data collection for this impaired waterbody. The 2013 QAPP included in the relicensing study did not include signature lines for MassDEP staff so it is unclear if MassDEP reviewed and approved the QAPP. CRSEC comments on the 2013 draft QAPP dated January 25, 2013, were submitted as Attachment 19 to our comments dated June 3, 2024. We refer to this Attachment again as a reminder of our concerns about the adequacy of this document.

In Appendix F to the draft WQC, MassDEP has included reference to the recommendations and protocol developed by Dr. John Field dated July 2011 in a report commissioned by several landowners along the Connecticut River titled, "Detailed analysis of the 2008 Full River Reconnaissance of the Turners Falls Pool on the Connecticut River, Prepared for Landowners and Concerned Citizens for License Compliance Turners Falls Pool." FRCOG supports these recommendations, specifically those related to the types and stages of erosion, and we recommend survey methods that reduce reliance on subjective measures, which introduce bias and reduce the ability to compare the results against subsequent river surveys. This is especially critical over the term of a 50-year license. We note that the 2013 QAPP did not follow Dr. Field's recommendations and allows for the bias these recommendations attempted to avoid.

Survey methods should be modernized and made less subjective and qualitative

The FRCOG and the CRSEC have long been concerned that the FRR methods are subjective, non-reproducible, and lack scientific rigor. The technology now exists to do regular surveys using

LiDAR that would be more quantitative and would remove subjectivity and bias from the process. Please see comments prepared by our consultant, Princeton Hydro, for more details on recommended survey methods included in Attachment A. Special consideration should be given to observing and recording erosion occurring at the toe of the bank where water levels fluctuate due to project operations.

Additionally, we have long recommended that regulators create a mechanism for hiring 3rd party consultants to carry out monitoring and reporting. If MassDEP includes this requirement, it will provide a level of assurance to regulators and stakeholders that sound data is driving the decision-making for and stewardship of this public trust resource.

Long term cross-section surveys should be continued

FRCOG recommends that the long-term cross-section monitoring be continued. These surveys have been happening on an annual basis for more than 20 years and represent an important data set that should not be cast aside. Please see FRCOG Condition 3(c)(a) from our comments dated June 2, 2024, for suggested ways to improve the reporting of the cross-section surveys.

Surveys need to supplement clear decision matrix on sites to be stabilized

The Erosion Control Monitoring program must clearly inform decisions on sites to be stabilized. There is no discussion in Appendix F about project designs and standards. FRCOG recommends such details be included in the QAPP and/or Plan, and that the CRSEC, Conservation Commissions and landowners be consulted during the design phase of any stabilization projects.

Repair of Previously Stabilized Sites

FRCOG supports the requirement that the licensee repair previously stabilized sites. We are not clear whether this requirement impacts new sites that are fixed in say, year 10, and would need repair later in the license. We assume this requirement would include those sites and recommend that this is clearly laid out in the permit.

We also note that the impact of some ice events is exacerbated by project operations. Bank scouring from blocks of ice floating downstream would not be a project effect, but large chunks of ice that froze along the banks and then broke off the bank when the river level dropped, taking rocks and soil with it, would be a project effect.

Stabilization of New Sites

MassDEP proposes that 5% of the sites that are newly identified after issuance of the license as exhibiting "some to extensive" or "extensive" erosion based on the definitions contained within the 2013 FRR and which were not previously repaired or identified in Table 1 of Appendix F shall be repaired.

MassDEP has not explained its choice of 5% or how this will ensure that the Connecticut River will meet water quality standards, although there is a provision that if MassDEP determines the 5% will not provide a significantly improved stream bank condition, MassDEP "may reserve the equivalent linear feet for use in the future." It is not clear what "for use" means. If MassDEP is reserving the right to require more than 5% of repairing in the future, it should choose wording that clarifies.

We re-iterate our concerns from CRSEC's comment letter dated November 14, 2014, on the FRR. Comments #3 and 4 showed that the definitions and the chosen length of river segments lead to many eroding banks being identified as having "none/little" erosion. MassDEP must ensure a data collection process (new QAPP) that eliminates bias in identifying the type and stages of erosion and potential bank stabilization and aquatic habitat projects that will improve and protect water quality.

MassDEP exempts the licensee from needing to repair sites that exhibit unique conditions and list several criteria. It is not clear if these types of conditions are exempt from being part of the 5% that are repaired, or if the linear feet of erosion of this type will be subtracted from any calculation of "new" sites. We support allowing eroded areas to remain eroded that offer habitat for sensitive wildlife receptors like bank swallows and belted kingfishers. As for the other areas that are proposed to be exempt, MassDEP should be aware that FirstLight has their own permitting program for irrigation withdrawals and docks within the Turners Falls impoundment, separate from the MA Water Management Act and Chapter 91 licensing. MassDEP should review FirstLight's permitting program in light of this Special Condition to see if it is truly appropriate to exempt the Licensee. Additionally, we have long stated that boat wakes are a secondary project effect.

2-mile long no-wake-zone near the Dam

MassDEP has proposed that FirstLight work with the appropriate state and federal agencies to implement a no-wake zone from the Turners Falls Dam upstream to approximately the property of the Scheutzen Verein Club in Gill, a distance of 11,000 feet or **2 miles**. This is a recreation requirement, so we will refrain from detailed comments because we signed the Recreation Settlement Agreement. MassDEP should note that such a provision is not in the Recreation Settlement Agreement, and we recommend MassDEP discuss the logistics of enforcement with the Environmental Police before finalizing this requirement, if they have not done so already.

Recommendations for Special Condition 25

1. Repair of Eroded Banks:
 - a. An initial round of bank repair of new and previously stabilized sites, as identified by MassDEP, should be constructed within the first two years after license issuance.

- b. The length of and schedule for bank stabilization projects should not be arbitrarily decided or based on the results of the flawed 2013 FRR and QAPP. Instead, the length of and schedule for bank stabilization projects should be specifically tied to the findings of the surveys conducted as part of a new Erosion Control Plan.
- 2. Erosion Monitoring:
 - a. A review committee should be established that includes the Connecticut River Streambank Erosion Committee (CRSEC) to oversee all components of Special Condition 25 and ensure that public review and input is incorporated.
 - b. A new Quality Assurance Project Plan (QAPP) must be developed and be regularly updated on a schedule at least every 10 years.
 - c. Survey methods in the QAPP must be state-of-the-science and reduce reliance on subjective measurements, which introduce bias and reduce the ability of MassDEP and stakeholders to compare the results against subsequent river surveys. See specific survey recommendations in Attachment A.
 - d. Require the hiring of a 3rd party contractor to carry out monitoring and reporting. This will provide a level of assurance to MassDEP and stakeholders that sound data is driving the decision-making process and stewardship of this public trust resource for the next 50 years.
 - e. Monitoring of the long-term cross-sections should be continued. See FRCOG Condition 3(c)(a) from our June 2, 2024, comment letter for suggested ways to improve the reporting of the cross-section surveys.
 - f. Monitoring and surveys need to inform clear decision matrices for bank stabilization projects. FRCOG recommends that project designs and standards be included in the QAPP and/or Erosion Control Plan and the CRSEC, town Conservation Commissions and landowners be consulted during the design and construction phases of any bank stabilization or habitat restoration projects.
- 3. Repair of Previously Stabilized Sites: FRCOG recommends that MassDEP specify that this requirement applies to sites repaired under the current FERC license and those repaired under the new FERC license.
- 4. Stabilization of New Sites: FRCOG disagrees with the entirety of this section of Special Condition 25, aside from the concept of a continued obligation to repair eroding banks. The length of and pace of bank stabilization work should be based on the data collection, monitoring and decision matrices in the new Plan and QAPP. See also 2f above.

Special Condition 26: Water Quality Monitoring

Though we did not request it in our comments dated June 3, 2024, FRCOG generally supports the requirement of long-term water quality monitoring program for the life of the license to better understand license compliance, and to determine operational impacts on water quality over several decades. We support the requirement of a QAPP to be updated for approval every five years.

Recommendations for Special Condition 26

1. A clear purpose for each monitoring requirement must be articulated.
2. The monitoring design and QAPP should have a public comment period in which the public could provide input on monitoring methods and locations.
3. Because the impairments listed in the Connecticut River segments above Barton Cove are not specifically due to chemical contaminants (see Regulatory Framework section earlier in this letter), it is critical that this Special Condition be rewritten to adequately track water quality status with regard to project operations and existing impairments.
4. The water quality, erosion, and riparian plans (and their associated QAPPs) should be interconnected to track progress towards meeting water quality standards.
5. Biological monitoring. Because the Connecticut River in the TFI is not supporting the Aquatic Life Use, we recommend that MassDEP require biological sampling. In MassDEP's 2022 Comprehensive Assessment and Listing Methodology (CALM), DEP includes an Index of Biotic Integrity (IBI) for wadable streams in Massachusetts. Presumably, the Connecticut River does not fall into the "wadable" category in most areas, but the TFI section of the Connecticut River is habitat for state-listed odonate species, and understanding trends of odonates in this stretch would be an important thing to keep track of. It is not clear if MassDEP ever moved forward with the work of Yoder et al. (2009) in developing an IBI for the Connecticut River.¹⁸ We recommend that MassDEP include a biological monitoring requirement looking at species that use the littoral zone of large river systems (with input from the USFWS Connecticut River Coordinator's office and MassWildlife) to track improvement toward meeting water quality standards, or track declines. Juvenile shad surveys conducted by agency staff should also be summarized and migratory fish numbers tracked as part of this requirement, so that project operations and erosion can be assessed together with biological surveys.
6. Monitoring to understand attainment of littoral zone impairment. Submerged aquatic Vegetation (SAV) is the term used for a rooted aquatic plant that grows completely under water. These plants occur in both freshwater and saltwater systems and are important habitat for fish because it provides them with a place to hide from predators and it hosts food sources such as small invertebrates and other prey. SAV essentially forms a canopy, much like that of a forest but underwater.

In February 2016, FirstLight published Study 3.5.1, Baseline Inventory of Wetland and Littoral Habitat in the Turners Falls Impoundment and Assessment of Operational Impacts on Special Status Species. As part of this study, FirstLight surveyed and mapped

¹⁸ Fish Assemblage and Habitat Assessment of the Upper Connecticut River: A Preliminary Report and Presentation of Data, 2009. <https://www3.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-650.pdf>

submerged aquatic vegetation (SAV) in the study area, which included the TFI. One map in the vicinity of the Northfield Mountain tailrace is copied below as Figure 4.

Study report 3.5.1 provides an important baseline survey of SAV. The New York State Department of Environmental Conservation has a webpage explaining SAV surveys of the Hudson River between 1997 to 2018, and they have a GIS map showing the SAV beds.¹⁹ A monitoring and mapping program like this could be an important way of monitoring progress toward water quality goals.

FRCOG recommends that MassDEP include a requirement that FirstLight conduct an SAV survey of the TFI every 5-10 years for the duration of the license. MassDEP should develop goals for what amount of SAV would meet water quality standards prior to the completion of the monitoring plan, and the sampling would track the path toward attainment.

7. Surface water temperature. We urge MassDEP to adopt modern monitoring technologies that remove sample design problems and bias. For example, Gerald Szal submitted comments to FERC dated December 17, 2024 (accession number 20241217-5091). Mr. Szal has no affiliation with FRCOG, and our understanding is that his comments were submitted on his own behalf. In Mr. Szal's letter, he used satellite infrared imagery to demonstrate his concerns about the impact of Northfield Mountain on water temperature in the Connecticut River. MassDEP is proposing to require water temperature monitoring. Though any QAPP would need to set quality assurance parameters of satellite imagery, the imagery provided in Mr. Szal's comments offer a much more comprehensive view of water temperatures than the few locations suggested by MassDEP.
8. Nutrients. It is not clear from the draft 401 WQC if MassDEP has been collaborating with the partners working on the Nitrogen Reduction Strategy for Long Island Sound.²⁰ We recommend careful collaboration with USGS and other partners to make any nutrient monitoring as useful as possible.

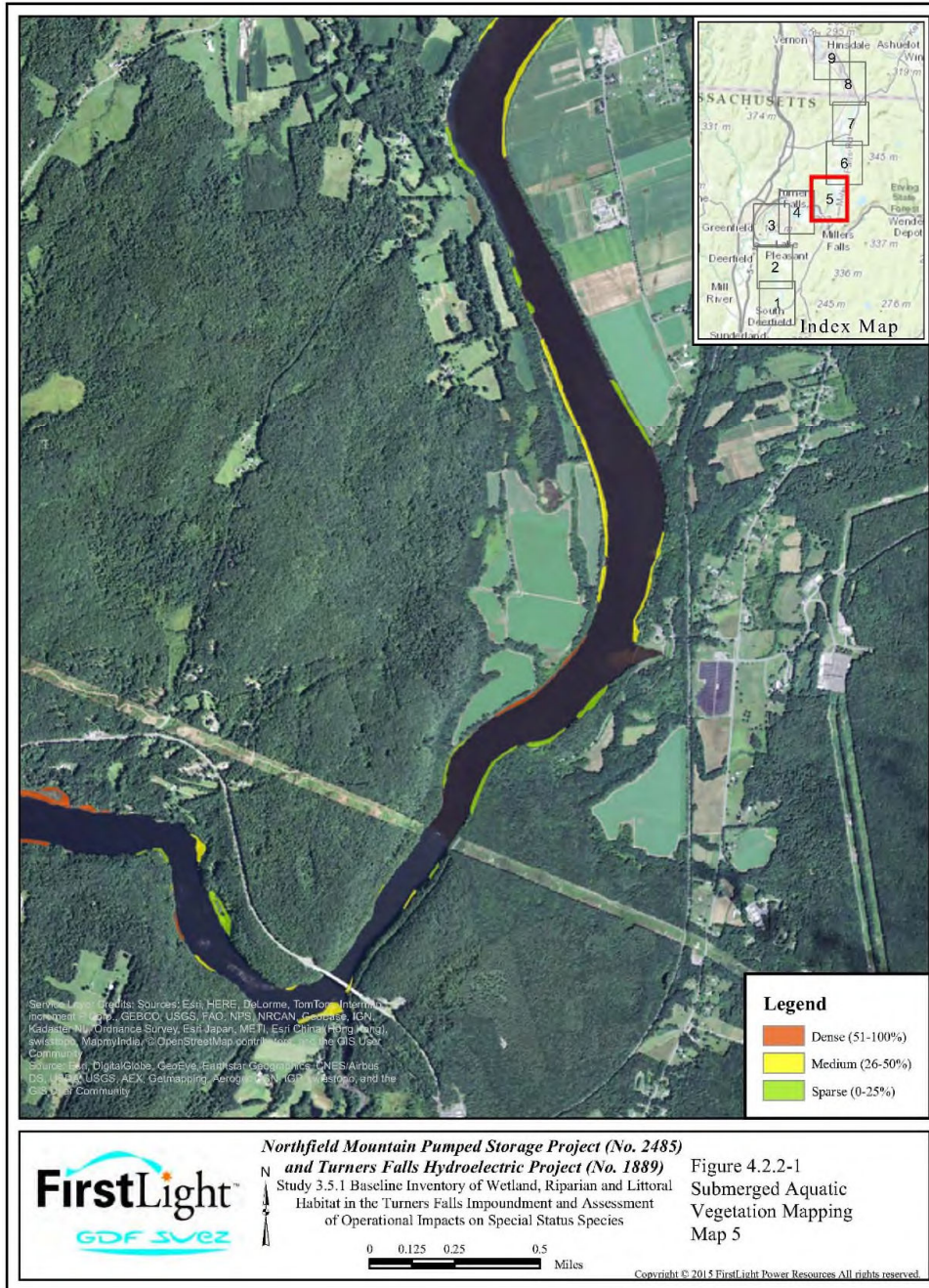
¹⁹ NYSDEC Hudson River SAV monitoring program described online here:

<https://dec.ny.gov/nature/waterbodies/oceans-estuaries/hudson-river-estuary-program/aquatic-habitats/submerged-aquatic-vegetation> and map is online here:
<https://data.gis.ny.gov/datasets/nysdec::hudson-estuary-submerged-aquatic-vegetation/explore?location=42.136608%2C-73.856602%2C12.00>

²⁰ More information at <https://longislandsoundstudy.net/our-vision-and-plan/clean-waters-and-healthy-watersheds/nitrogen-strategy/>

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Figure 4. One of several maps showing the SAV survey from Study 3.5.1. This map shows the river segment that includes the location of the Northfield Mountain tailrace.



Path: W:\gis\studies\3_5_1\maps\Study_3_5_1_SAV_Report_Figures.mxd

9. Total Suspended Solids (TSS). Rivers with impoundments are often thought of as “sediment starved” because dams reduce the movement of sediments downstream.²¹ Movement of TSS can be important for river health, but it can also be a pollutant. MassDEP should establish a management goal for desirable sediment transport in the Connecticut River system, and figure out how this 401 Water Quality Certificate fits into the goal.

Vernon Dam lies just upstream of the TFI, and there are hundreds of miles of river, with many more dams upstream, that can contribute TSS in the Connecticut River. The Connecticut River can often contain TSS washed downstream from storms far upstream. The sampling regime should be designed to help us understand whether MA 34-01 and 34-02 are meeting the standards for “flow regime alteration” or “stream-side or littoral vegetative covers. The proposed frequency (twice monthly) of sampling of TSS, limited to the months only of June-September, at the river segment between the Route 10 bridge and the dam (but not in segment MA34-01 upstream of the project), the Northfield Mountain tailrace, and the river below Cabot Station, is insufficient to inform our understanding of the effects of erosion from the Northfield Mountain Project. Section 4.2 of Study Report 3.1.3 demonstrated that TSS levels spiked when there were high flow events in the Connecticut River and looked at operational effects on TSS at lower flows. We are unsure what to recommend to improve this requirement without understanding better MassDEP's purpose. At a minimum, the Sediment Management Plan should be tied in to this requirement.

We encourage MassDEP to reach out to their federal and state partners and to work with FirstLight to develop a water quality monitoring plan that is related to best understanding long-term trends with regard to project effects and water quality impairments.

Special Condition 27: Invasive Species Management Plan

FRCOG supports the requirement of an Invasive Species Management Plan to address a listed impairment.

Recommendations for Special Condition 27

1. FRCOG requests that MassDEP add mention of a required public comment period on the draft Invasive Aquatic Plant Monitoring, Treatment, and Control Implementation Plan, and that all relevant agencies and organizations involved in aquatic invasive species be allowed to comment.

There are a large number of watershed state agencies and nonprofits that have worked collaboratively on invasive species management in the Connecticut River through the

²¹ See, for example, this post by American Rivers: <https://www.americanrivers.org/2023/08/sedimentation-and-dam-removal-bringing-a-river-back-to-life/>

Northeast Aquatic Nuisance Species Panel.^{22 23} Massachusetts Department of Conservation and Recreation's Lakes and Ponds program has focused on aquatic invasive plants and is inexplicably not mentioned as a consulting agency. MassDEP will benefit from other agency input, especially since this plan will be in force for 50 years.

The survey reports should be similarly distributed to these agencies and organizations, as well as the public, for their comment before the February 1 deadlines and agency meetings.

2. FRCOG continues to believe that rapid identification and response may someday be needed for non-plant aquatic invasives that may spread or become established due in part to project operations. The Plan should be adaptable to include other invasive aquatic species in the future.
3. Throughout Attachment G, the Turners Falls power canal should be mentioned as a location of rapid response, monitoring, and control of aquatic invasive species.
4. Attachment G, Section 2, paragraph 2 states that the licensee will not be responsible for treatment measures outside Barton Cove. The Turners Falls power canal should certainly be included in the areas that the licensee is responsible for. Additionally, there has been a small patch of water chestnut in the river channel just upstream of Barton Cove that FirstLight has long managed and monitored, and responsibility could continue. Given that the impoundment is 20 miles long, the justification for limiting FirstLight's responsibilities is not clear and appears unwarranted.
5. Section 2 requires the Licensee to allocate internal funds for the "treatment" of aquatic plants. The word "treatment" is not defined, and FRCOG recommends the definition not be limited to chemical treatment. Some aquatic invasives can be reduced or eliminated through hand or mechanical removal, which is preferred over the use of chemicals, if effective.

Special Condition 28. Riparian Management Plan

FRCOG supports the requirement of a Riparian Management Plan to address listed impairments.

MassDEP proposes to require FirstLight to maintain a 75-foot vegetated riparian zone on properties owned by the Licensee. MassDEP did not provide a rationale for 75 feet in their Findings. The 1996 Massachusetts Rivers Protection Act provides protection to rivers by regulating activities within the Riverfront Area, which is a 200-foot-wide corridor on each side of a perennial river or stream, measured from the mean annual high-water line of the river. The requirements of the Rivers Protection Act have been incorporated into the Wetlands Protection

²² <https://www.northeastans.org/index.php/home-page/>

²³ See the 2019 report titled "Mapping of Invasive Aquatic Species in the Connecticut River with a focus on Hydrilla verticillata & Trapa natans Agawam to Turners Falls, MA," conducted for the MA Department of Conservation and Recreation which had survey locations within the project areas up to the French King Bridge. <https://www.northeastans.org/docs/meetings/201906/files/Hydrilla%20workshop%20Straub.pdf>

Act regulations, 310 CMR 10.00. The Wetlands Protection Act establishes a buffer zone of 100 feet around other types of wetlands.

Parts (a), (b), and (d) of Special Condition 28 introduce unnecessary confusion over what lands fall under the Riparian Management Plan's requirements. In part (a), the riparian zone is described as property "owned by Licensee along the Connecticut River, where feasible (as determined by MassDEP)." Then in part (b), it states that the plan shall include "all lands owned in fee by the Licensee abutting the Connecticut River other than those used for the Specific Project Purposes identified above." It then lists specific project purposes identified below. These first two definitions are similar but not exactly the same, and the lands covered in the plan may or may not be ultimately decided by MassDEP. If FirstLight acquires any new land in fee during the license period, that land should fall under this requirement. Finally, in (d), it states that if the Licensee sells any land, all purchasers shall be given a copy of the Plan prior to sale.

Finally, Special Condition 28 unreasonably limits the scope of the plan to "lands that the Licensee owns in fee along the Connecticut River shoreline other than those used for the Specific Project Purposes of power production and Project recreation facilities." FirstLight may not, however, currently own all of the land in fee that is within the FERC Project Boundary and subject to erosion as a result of the operation of the Northfield Mountain Project. According to the maps in Study Report 3.6.5, revised dated May 31, 2016, there are significant parcels of land within the FERC Project Boundary that are not owned in fee by FirstLight but instead are subject to "flowage rights, leases, easements, etc." Many of these parcels are likely to be in active agricultural use, be designated as Prime Farmland, and/or are permanently protected by agricultural or other conservation easements. These lands should not be summarily excluded from the Riparian Management Plan.

Recommendations for Special Condition 28

1. MassDEP should require a managed riparian area that is relevant to Massachusetts laws and regulations relating to rivers. FRCOG recommends that regulated resource areas (shown below) be referenced in the 401 WQC as illustrated below in Figure 5.
2. FRCOG strongly recommends targeted elimination, management, and treatment of priority riparian invasive plants within the riparian management plan. A healthy and diverse riparian habitat will be significantly impaired if taken over by oriental bittersweet. For more information, please see our comment letter dated June 3, 2024.
3. FirstLight should not be able to sell land along the Connecticut River, if that land will continue to be covered by the requirements of the FERC license and the 401 WQC including the Riparian Management Plan.
4. FRCOG recommends that part (c) be amended to incorporate review and approval of the draft plan by the New Hampshire Department of Environmental Services (NHDES) and Vermont Department of Environmental Conservation (VT DEC), as this provision appears to and should involve FirstLight's riparian lands in New Hampshire and Vermont. FRCOG

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also recommends amending this section to incorporate public review of a draft Plan, and public posting of the Final Plan, with a set of maps clearly defining the parcels involved.

5. For this reason and in order for the Riparian Management Plan to be effective, the Plan should extend to all lands subject to erosion within the FERC Project Boundary. As currently written, Special Condition 28 is incomplete. Unless revised to encompass all land subject to erosion, as opposed to just land owned in fee, neither MA DEP nor the public will have sufficient assurance that this Plan, once approved and implemented, will address the impacts of the Project on water quality.
6. For properties not owned by FirstLight in fee but subject to easements, MassDEP should require FirstLight to consult with the landowners and develop riparian management strategies that will prevent erosion and are complementary to the current use of the land, whether it be active agricultural use of permanently protected farmland, stewardship of conservation land, or some other use.

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Special Condition 29: Recreation Management Plan

FRCOG signed on the Recreation Settlement Agreement and fully supports MassDEP's adoption of the Recreation Management Plan into the 401 Water Quality Certificate.

Special Condition 30: Sediment Management Plan

FRCOG supports the requirement for the licensee to file a revised Sediment Management Plan and to file a report summarizing monitoring and disposal details after each dredging event.

Recommendations for Special Condition 30

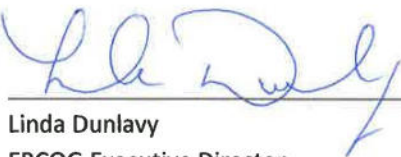
1. We encourage MassDEP to expand this requirement for any dredging activities in the project areas.
2. Both the Plan and the reports should be publicly posted; the easiest way to require that would be to require the licensee submit the same documents to FERC, which maintains a publicly available project docket.
3. A regularly updated QAPP should be required for the Sediment Management Plan.

Conclusion

FRCOG urges MassDEP to address the water quality impairments in the Connecticut River upstream of the Turners Falls Dam. This section of river has undergone a large experiment for the last 50 years. The impacts have been significant, and this is the only opportunity to course correct and set appropriate conditions for the next 50 years.

Thank you for this opportunity to review and provide comments on this draft Certificate. If you have any questions, please do not hesitate to contact myself (lindad@frcog.org) or Kimberly Noake MacPhee (kmacphee@frcog.org).

Sincerely,



Linda Dunlavy
FRCOG Executive Director

FRCOG Comments on the draft 401 WQC for FirstLight's Hydroelectric Projects
February 24, 2025

ATTACHMENTS

A: Princeton Hydro memo dated February 24, 2025

B: Figure 30 in Field Geology Services (2007), Fluvial Geomorphology Study of the Turners Falls Pool on the Connecticut River Between Turners Falls, MA and Vernon, VT. Prepared for Northfield Mountain Pumped Storage Project by Field Geology Services, Farmington ME, November 2007.

cc:

FERC Secretary Debbie-Anne A. Reese

Senator Edward Markey

Senator Elizabeth Warren

Massachusetts Governor Maura Healey

State Senator Jo Comerford

State Representative Natalie Blais

State Representative Susannah Whipps

Bryan Smith, Town Administrator, Town of Erving, MA

Ray Purington, Town Administrator, Town of Gill, MA

Walter Ramsey, Town Administrator, Town of Montague, MA

Andrea Llamas, Town Administrator, Town of Northfield, MA

Nina Gordon-Kirsch, River Steward, Connecticut River Conservancy

Nina Gordon-Kirsch
MA River Steward
Connecticut River Conservancy
15 Bank Row | Greenfield, MA 01301

**RE: Comment on Water Quality Certification with Conditions
FirstLight Hydroelectric Project
FERC License Nos. 1889 (Turners Falls) and 2485 (Northfield Mountain)**

February 24, 2025

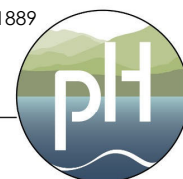
Dear Ms. Gordon-Kirsch,

Princeton Hydro LLC (Princeton Hydro) was retained by the Connecticut River Conservancy (CRC), a stakeholder and participant in the re-licensing process of the Federal Energy Regulatory Commission (FERC) for two hydropower facilities owned by FirstLight Power Resources Inc. (FirstLight) on the Connecticut River, to provide a technical review of the components of the Draft 401 Water Quality Certification (WQC)¹ related to bank stability and monitoring for the reach of the Connecticut River known as the Turners Falls Impoundment (TFI). FirstLight MA Hydro LLC and Northfield Mountain LLC (collectively FirstLight or the Applicant), respectively, filed applications for new major licenses to operate the 62.0-megawatt Turners Falls Hydroelectric Project (Turners Falls Project; FERC No. 1889) and the 1,166.8-MW Northfield Mountain Pumped Storage Project (Northfield Mountain Project; FERC No. 2485).

Introduction and Background

As part of the relicensing process, FERC regulations required FirstLight to file with the Massachusetts Department of Environmental Protection (MassDEP) its 401 Water Quality Certificate Application. FirstLight filed a single 401 Application with MassDEP for

¹ Mass DEP, (Draft) Water Quality Certification with Conditions, 2025. FirstLight Hydroelectric Project, FERC License Nos. 1889 (Turners Falls), 2485 (Northfield Mountain), dated January 24, 2025.



both Projects on April 22, 2024. The submission of the 401 Water Quality Application is an essential part of the relicensing process as it must receive the approval of Massachusetts. Under Section 401 of the Clean Water Act (CWA), a federal agency may not issue a permit or license to conduct any activity including Federal Energy Regulatory Commission (FERC) licensed hydropower facilities unless a Section 401 WQC is issued by a state, or certification is waived. It is also important to acknowledge that the WQC review process seeks to ensure that the project, in this case FirstLight's relicensing of the Turners Falls Project and the Northfield Mountain Project, will not continue to negatively impact the water quality of the Connecticut River as set forth in Massachusetts's surface water quality standards. A "WQC" under the Clean Water Act enables states to participate in a federal approval process such as the FERC relicensing of FirstLight's hydropower facilities to protect water quality in a water body such as the Connecticut River by allowing states to regulate and potentially deny permits for projects that could worsen the condition of any water body including already impaired waters. In this context the WQC process must be shown by FirstLight to be consistent with the designated water quality standards for relevant segments of the Connecticut River. The stretch of the Connecticut River associated with the Turners Falls Dam and the Northfield Mountain Pumped Storage Project is listed as Class B waters, which are designated in accordance with 314 CMR 4.05(3)(b) "as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation." Importantly, and of relevance to the pending 401 application, the entire Massachusetts part of the Connecticut River upstream of the Turners Falls Dam is listed as impaired in the 2022 Massachusetts Integrated List of Waters. The stated impairments in the upper 3.5-mile section of the

Turner Falls Impoundment (TFI) are indicated to be due, at least in part, to “alteration in streamside or littoral vegetative covers” and “flow regime modification”.² Similarly, the segment of the Connecticut River from the Route 10 bridge to the Turners Falls dam is also considered to be impaired, in part, for the same reasons “alteration in streamside or littoral vegetative covers” and “flow regime modification”.

The combination of the two causes of impairment identified above are not commonly designated in Massachusetts and would appear to be specific to the Turners Dam impoundment and pumped storage project operations. The role of First Light's operations on erosion has been consistently identified in comments by various experts indicating that project operations contribute or exacerbate erosion in the TFI. However, FirstLight's application for this WQC states that “[a] consistent finding throughout all the erosion evaluations conducted during relicensing is that the dominant causes of erosion in the TFI are high flows/floods and, in the Barton Cove area, boat waves. Project operations is not a *dominant* cause of erosion at any locations in the TFI but is a contributing cause of erosion in the following locations of the TFI in Massachusetts: in: (1) an approximately 21,600-foot-long reach from the exit of Barton Cove to the French King Gorge (both sides of the river), and (2) an approximately 4,700-foot-long reach on river right upstream of the Northfield Mountain tailrace.”³ Based on work done on an earlier report by Princeton Hydro⁴ and review of other reports regarding the TFI including reports

² Final Massachusetts Integrated List of Waters for the Clean Water Act 2018/2020 Reporting Cycle. November 2018-2021. Watershed Planning Program.

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls.html>

³ FirstLight. April 22, 2024. Prepared for: FirstLight. Northfield, MA: Author. April 22, 2024. Turners Falls Hydroelectric Project (FERC No. 1889) Northfield Mountain Pumped Storage Project (FERC No. 2485) 401 Water Quality Certificate Application.

⁴ Wildman, L., Woodworth, P., & Daniels, M. (October 2016). Peer-Review of Relicensing Study 3.1.2 Northfield Mountain / Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability Study Report.

by the US Army Corps of Engineers (1979)⁵, Field Geology Services⁶ (2007) and, most recently, Dr. Evan Dethier (2024)⁷ we remain unconvinced that FirstLight's position indicating that operations do not have a significant or dominant role in the impoundment's erosion issues is accurate. Dethier (2024) states that "There is substantial evidence of erosion in the Turners Falls Impoundment (TFI), much of it consistent with fluctuations in water level due to dam operations. Several reports and memos, including by the US Army Corps of Engineers, Field Geology Services, and Princeton Hydro, have already established that water level fluctuations in the TFI can, and do, enhance erosion in the reservoir."

Impacts on bank stability and water quality associated with the operations of pumped storage facilities such as TFI have been documented for many years. For example, in a 1982 document by the US Army Corps of Engineers states "[o]perating a reservoir in a peaking mode, that is, controlling releases to match peak energy demands, creates another level of impacts within the reservoir and downstream of the dam. Reservoir fluctuations cause many biological impacts in addition to the aesthetic and recreational nuisance of the exposed drawdown zone."⁸ This publication goes on to state "**[l]arge seasonal or diurnal fluctuations in water level primarily affect the stability of the shoreline substrate and water quality** (emphasis added)."⁹ A 1981 report by Dames

⁵ U.S. Army Corps of Engineers, 1979, Report on Connecticut River Streambank Erosion Study: Massachusetts, New Hampshire and Vermont: Department of the Army New England Division Corps of Engineers: Waltham, MA, 185 p.

⁶ Field (Field Geology Services), 2007, Fluvial geomorphology study of the Turners Falls Pool on the Connecticut River between Turners Falls, MA and Vernon, VT: Unpublished report prepared for Northfield Mountain Pumped Storage Project, 131 p

⁷ Dethier, Evan May 19, 2024, Review of Erosion in the Turners Falls Impoundment Prepared for the Connecticut River Conservancy and Franklin Regional Council of Governments. 53 pages

⁸ United States Army Corps of Engineers. March 1982. National Hydroelectric Power Resources Study, Environmental Assessment. Institute for Water Resources, Kingman Building, Fort Belvoir, Virginia 22060. Page 3-7.

⁹ id

and Moore describes the adverse effects of reservoir water-level fluctuations during hydropower operations and indicates impacts such as “**degradation of wetland habitats above the dam; with bank erosion**”.¹⁰ In a more recent 2020 publication by Saulsbury, he states “[b]oth open-loop and closed-loop PSH (pumped storage hydropower) pumping and generating operations may affect geology and soils primarily due to large and frequent reservoir water-level fluctuations and resulting shoreline erosion. These impacts may be higher at open-loop projects such as Northfield Mountain, including add-on projects where the lower reservoir was already constructed for other purposes, because of the potential effects of their shoreline erosion and resulting sedimentation on the naturally flowing water bodies to which they are connected.”¹¹ Evan Dethier stated that “[t]he current project operational range for reservoir levels exacerbates erosion relative to a narrower range by exposing a large swath of the reservoir banks to erosive properties and raising the “base-level” for natural flooding, adding to flood heights and thus erosive power.”¹²

It is, however, interesting that the operations of other pumped storage facilities are often linked to erosion, but FirstLight asserts that the TFI is somehow not. FirstLight's claim that the predominant impacts on riverbank stability stems from “natural” high flows and boat traffic wake is questionable. There is nothing natural about the TFI. The simple existence of the TFI and pumped storage operation already creates a baseline of

¹⁰ Dames and Moore. 1981. *An Assessment of Hydroelectric Pumped Storage*. In *National Hydroelectric Power Resources Study*. Volume X. Prepared for the U.S. Army Engineer Institute for Water Resources, Fort Belvoir, Virginia. <https://www.iwr.usace.army.mil/portals/70/docs/iwrreports/iwr019-000001-000517.pdf>

¹¹ Saulsbury, J.W. A Comparison of the Environmental Effects of Open-Loop and Closed-Loop Pumped Storage Hydropower; Pacific Northwest National Lab. (PNNL); Richland, WA, USA, 2020.

¹² Dethier, Evan May 19, 2024, Review of Erosion in the Turners Falls Impoundment Prepared for the Connecticut River Conservancy and Franklin Regional Council of Governments. Page 52.

complex anthropogenic impacts to the hydrology of the Connecticut River that has little in common with a natural river system. The artificial elevation of the river correspondingly elevates the adjacent groundwater all along the TFI, while the Northfield Mountain pumped storage system adds the variability of the water surface elevations in the TFI daily. At a minimum, these artificial elevations of the TFI section of the Connecticut River influence every instance of bank failure.

We commend MassDEP on its understanding and recognition of the issues associated with operations and erosion in the TFI as indicated in the following statement:¹³

"...it is clear that project operations will continue to contribute to erosion in the TFI. It is difficult, however, to quantify the extent of that contribution. It is therefore necessary to establish erosion-related measures in the WQC to address the existing impairments and to ensure compliance with the SWQS. The measures are intended to balance the limitations and difficulties of precisely determining erosion causation in the TFI with the need to address existing erosion and impairments and monitor for and address any future erosion. The SWQS require that the existing and designated uses and the necessary water quality be maintained and protected and that they be free from solids, color, and turbidity that would be aesthetically objectionable, impair any use, or impair the benthic biota or degrade the chemical composition of the bottom."

¹³ Mass DEP, (Draft) Water Quality Certification with Conditions, 2025. Page 41 of 117.

It is in this light that our comments focus on the issues associated with reliance on a dated erosion and sediment control plan, the 2013 Full River Reconnaissance (FRR) Quality Assurance Plan¹⁴. It is also important to acknowledge that the 2013 FRR avoids the identification of issues related to operations such as the absence of vegetation and bank instability as contributing to water quality impairment.

We have significant issues concerning the Draft WQC and the proposed use of the 2013 Full River Reconnaissance Report (2013 FRR) and the associated Quality Assurance Project Plan (QAPP) to guide Special Condition 25, which is detailed in Appendix F, of the Draft 401 WQC. Failure to use objective, quantitative metrics to determine the causes of bank instability and loss of shoreline vegetation will not contribute to the development of consistent water quality improvements. Specifically, our concerns are summarized below and then described in more detail in the following pages.

1. **The methods in the 2013 FRR and its QAPP warrant an update, especially considering MassDEP's understanding that operations play a key role in the erosion as well as bank instability and the absence of shoreline vegetation within the impoundment.** Since 2013, technology has advanced and reduced survey and monitoring costs. For example, unmanned aerial vehicles (UAV) or helicopter LiDAR surveys can accurately survey and provide repeatable, defensible documentation. This technology would provide a complete survey of the entire impoundment; including the measurement of elevations with as

¹⁴ Simons & Associates and New England Environmental (2012), Quality Assurance Project Plan, 2013 Full River Reconnaissance Turners Falls Impoundment of the Connecticut River, October 29, 2012.

small an interval as several inches and can document and calculate vegetative cover.

2. **The 2013 FRR is too focused on visual indicators of erosion and fails to place much, if there is any, emphasis on bank instability that is more related to operations.** Appendix D of the 2013 QAPP proposes to use reference photographs to estimate bank heights, slopes, soils/sediment types, vegetative cover, and erosion. However, as will be discussed, the proposed use of photographs, and subjective and inconsistent metrics which will only provide inaccurate/inconsistent judgements of the condition of the slopes. While the conditions for “erosion” are noted, they do not include global stability and deep-seated failures, such as slides, that are clearly shown in the photographs but downplayed in the descriptions.
3. Because the FERC license has a 30 to 50-year life span, **the Final WQC must have provisions to update survey methods as technology is developed to further improve the accuracy, repeatability, and defensibility of data collected.**
4. **The formation of a panel of experts, with equal voting rights, must be included as a requirement of the Final WQC to evaluate developing trends in surveying, monitoring, and mitigation techniques and technology.** At a minimum, the panel would consist of representatives from MassDEP, FirstLight, Franklin Regional Council of Governments, CRC, Connecticut River Streambank Erosion Committee, and their respective experts to evaluate the progress of monitoring, conditions of the river and its banks, and make recommendations to ensure protection of the water quality of the Connecticut River.

5. In Appendix F of the Draft 401 WQC, the determination of how much bank stabilization needs to be completed is vague, at best, and from what we can interpret of **the requirement to repair 5% of a failed riverbank will be meaningless regarding protecting water quality.**
6. In Appendix F of the Draft 401 WQC, MassDEP is proposing that FirstLight repair newly eroding sites. **The provision to allow five (5) years to implement bank stabilization measures provides permission for FirstLight to violate the MA Water Quality Standards for that period, when sediment and nutrients contained in the sediment will continue to discharge to the Connecticut River.**

Comments on Monitoring within the Draft WQC Appendix F, Erosion, Stabilization, and Monitoring Plan

After a thorough and thoughtful review of all the documents and comments submitted regarding FirstLight's application for 401 Water Quality Certification, MassDEP

"finds it necessary to impose the erosion-related measures in Special Condition 25 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 25."

Special Condition 25 relates to the Erosion Mitigation, Stabilization, and Monitoring Plan located at Appendix F of the Draft 410 Water Quality Certification. A comprehensive and current plan to address shoreline issues within the impoundment is essential to MassDEP's goal of improving impoundment water quality. It is vitally important that monitoring and

the resulting mitigation and stabilization measures be based on highly repeatable, defensible, and precise measures for determining the causation of shoreline and riverbank erosion and instability. Appendix F of the Draft 401WQC is relying upon the 2013 FRR in Study No. 3.1.1.¹⁵ Appendix F of the Draft WQC and the 2013 FRR rely on metrics and methodologies that are dated in terms of the available remote survey technologies. In fact, the 2013 QAPP to Study 3.1.1 (included as Appendix D in the study report to 3.1.1) relies upon references photographic/video georeferencing and global positioning systems (GPS) equipment that has been surpassed in technological development.

Frequency of Observations

One area for which we mostly agree with the proposed monitoring plan is the frequency of field observations. According to the 2013 QAPP, FERC requires FirstLight to conduct FRRs every 3- 5 years¹⁶, however, the Draft WQC states that Erosion Monitoring Surveys will be conducted in years 2, 10, 20, and 30¹⁷, while Boat-Based Inspections are to be conducted in years 4, 6, 8, 12, 15, 25, 35, and 45¹⁸; leaving a 10 year gap between years 35 and 45, and no inspections at year 50. MassDEP would be better served by requiring inspections at consistent intervals, with three (3) years for the life of the FERC License as the standard for scheduled surveys. Such consistency will allow for the identification of riverbank change over time. As will be described below for improvements to monitoring, in addition to the years specified above (whichever is determined to be correct), a baseline survey must be completed in the first year of the issuance of the FERC license, and it would be beneficial to provide additional FRR surveys

¹⁵ Simons & Associates and New England Environmental (2012).

¹⁶ Simons & Associates and New England Environmental (2012). Page 5 of 38.

¹⁷ Mass DEP, (Draft) Water Quality Certification with Conditions, 2025. Page 107 of 117.

¹⁸ Mass DEP, (Draft) Water Quality Certification with Conditions, 2025. Page 108 of 117.

following major storm induced flooding, such as those caused by hurricanes, tropical depressions, and other major flooding events. In addition to consistent frequency of surveys, It is imperative that these surveys are conducted at a level as to be accurate, replicable, and defensible in the eyes of MassDEP, using modern methods (further described below). Without this, the proposed FRR monitoring plan is unenforceable due to the vagueness and lack of detail to be obtained.

Equipment included in the 2013 QAPP

None of the equipment and observation methodology described in the 2013 QAPP is adequate for accurately determining the progression of bank failure when it occurs. The proposed equipment to be used in the assessment of the TFI's riverbank conditions only provide support for the location where qualitative and subjective (see below for comments on the bank condition classification system) observations are made and are not repeatable in terms of understanding monitoring of the changes in topography are made, especially to those movements that would otherwise reveal that a slope is mobilized.

Trimble Geoxt Sub-Meter GPS Specifications – Appendix A of the QAPP specifies a Trimble submeter accurate GPS product, and the version of this model from 12 years prior. Due to reductions in cost of equipment and increased access to reference GPS stations, submeter accuracy systems have been supplanted by sub-centimeter/survey grade Real Time Kinematic (RTK) GPS equipment to allow for detailed surveys rather than simple locating of points of observations. Current technology allows for the collection of sub-centimeter accuracy elevations to be collected directed on the slopes with relative ease. This would provide MassDEP with a clearer

understanding of how the riverbanks are responding to hydropower operations.

Laser Range Finder Equipment Specifications – Appendix B of the QAPP includes a product brochure for a LTI TruPulse 360B range finder. These range finders are handheld and subjective in terms of where on a slope, for example, a distance is measured. The manufacturer's specifications included in this appendix state that the accuracy of the device is ± 1 ft (this means that a distance could be 2 feet off), with an inclination and azimuth accuracy of ± 0.25 degrees and ± 1 degree, respectively. The accuracy combined with the inconsistent measurement points chosen on a slope at each event, will not provide useful information on changes in elevations and slopes, especially where a slope is already failing, but in slow progression between survey events.

Red Hen Systems - A quick search on the internet for the "Red Hen Systems Geo-Referenced Video Mapping" equipment included as Appendix C of the QAPP, reveals the latest website reference to this equipment is dated 2016. It is not clear that this equipment can be purchased or serviced/calibrated by Red Hen Systems, if they are no longer in business. This equipment may have been made obsolete with the advent of georeferenced smart phone photographic technology, but even then, all these systems provide is a location for where the photographs were taken.

Riverbank Classification Reference Photographs

Appendix D of the 2013 QAPP includes a proposed classification system to assess the Upper Riverbank Slope, Lower Riverbank Sediment, Upper Riverbank Height, Upper Riverbank Vegetation, Lower Riverbank Vegetation, and Extent of Current Erosion. On the last page of Appendix D (and of the entire document) it states:

NOTE: All quantitative classification criteria (e.g., slope, height, vegetation, extent, etc.) will be based on approximate qualitative estimates made during field observations of riverbanks. The FRR is a reconnaissance level survey that will not include quantitative field measurements of characteristics. Photographs contained in this appendix will be used for reference checking in the field to ensure consistent and accurate data classification.

Table 7: Types of Erosion Occurring in the Turners Falls Impoundment and their Characteristics


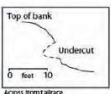
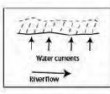

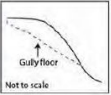
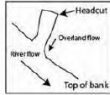

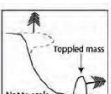
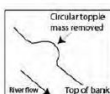

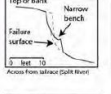
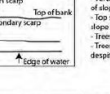

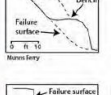
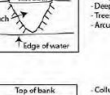

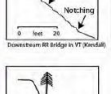
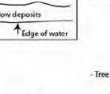

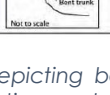

Erosion type	Photo	Profile	Planview	Description
Falls - Undercuts				- Undercutting - Notching and oversteepening at the toe of the slope
- Gullies				- Gullies formed by overland flow and groundwater seeps
Topples				- Vertical tension cracks at the top of slope - Trees lean away from bank - Toppled mass creates mound of soil at base of bank

Table 7: Types of Erosion Occurring in the Turners Falls Impoundment and their Characteristics (continued)

Erosion type	Photo	Profile	Planview	Description
Slides - Planar slip				- Vertical tension cracks at top of slope - Top surface of slide mass has flatter slope than rest of bank (narrow bench) - Trees lean in towards bank - Trees can remain in growth position despite sliding
- Rotational slump				- Vertical tension cracks at top of slope - Deeper seated than slips - Trees lean in towards bank - Arcuate failure surfaces
Flows - Grain flows				- Colluvial deposits created by flows accumulate at base of slope to form concave up surfaces
Creep				- Tree trunks bent downslope at base

(Field, 2007)

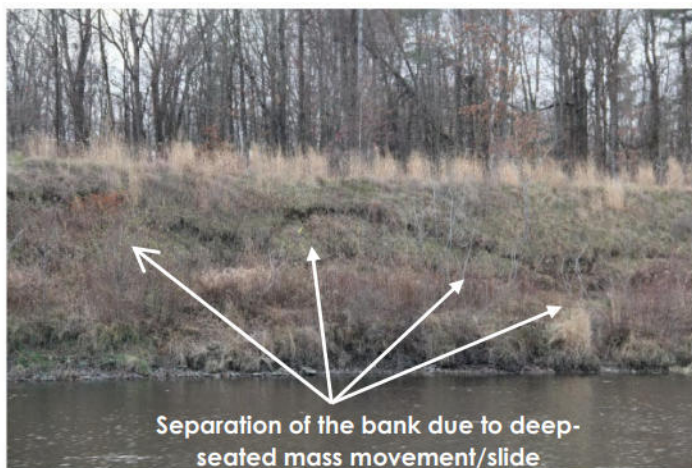
Figure 1 Table (sic) 7 from the 2013 QAPP. While labeled as erosion, it is actually depicting bank stability and failure mechanisms, both caused by erosion, as well as other factors such as loss of vegetation and rapid drawdown of the impoundment.

This statement is contradictory in that it claims to be “quantitative,” but subsequently qualifies that word using the phrase “approximate qualitative estimates” (each of these three words used are subjective). This note goes further to admit that the “...FRR is a

reconnaissance level survey that will not include quantitative field measurements of characteristics." **There will be absolutely no way to determine if there has been any degradation of riverbanks, unless there are massive changes or catastrophic failures that would by then negatively impact water quality by introducing significant quantities of sediment to the river.** There is the potential for significant variation in observations, both from the same individual over time, and from different individuals conducting the surveys. **Human errors must be eliminated in the documentation as much as possible. Based on current technology, these surveys should be done more rigorously and with repeatability/replicability.**

Additionally, while mass failures of the slopes were depicted within Table 7 of the 2013 QAPP (Figure 1), none of these failure mechanisms were included as one of the parameters in the classification photographs in Appendix D of the QAPP.

The example photographs and their corresponding "classification"



None/Little (<10%)

Figure 2 "Extent of Current Erosion" identified as "none/little (<10%)" in Appendix D of the QAPP. Arrows pointing to surface evidence of separation, and circle illustrates the portion sliding into the river. "rotational slump" per Table 7 (See Figure 1, above).

focus on erosion and not mass failures of the riverbanks. A prime example of the inconsistency in the example photographs included in Appendix D, is illustrated in Figure , where the "Extent of Current Erosion" is identified as "none/little (<10%)". This figure

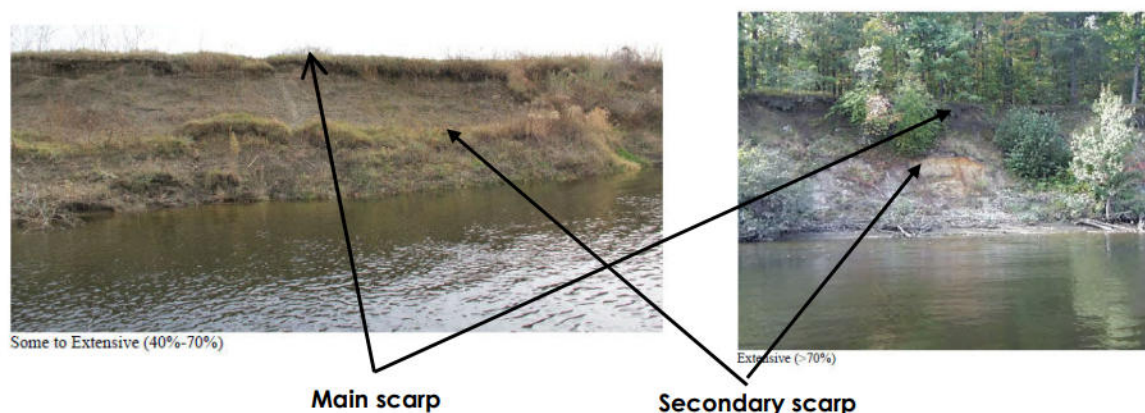


Figure 3 Two photographs depicting "planar slip" as per Figure 1 above. These two have the same failure mechanism and would both be considered "extensive" by this author. It is unclear as to how the preparer of the QAPP determined which one was more extensive, unless they based it on vegetative cover, which would be a different category.

clearly shows the initiation of a deep-seated bank failure as shown in the arch shaped separation, highlighted. This bank should have been identified as "extensive."

Another example is illustrated in Figure 3, wherein the failure mechanisms are identical, yet having various levels of severity for the same condition illustrate the additional confusion that will result when the surveys are completed, and MassDEP will be tasked with enforcement of the WQC.

Updated Requirements of Technology for Use in Monitoring, combined with Modeling

The subjectivity and outdated survey methods proposed in the 12-year-old FRR and its QAPP must be updated and improved to accurately define the existing conditions of the Connecticut River's banks. Otherwise, MassDEP will not have the data and information to adequately enforce the requirements of the WQC and improve the state's water quality.

Due to the advancement and cost efficiency of LiDAR technologies for use in the monitoring of rivers and bank stability, obtaining riverbank topographic data and vegetative cover, even over an impoundment as long as one behind the Turners Falls Dam, is strongly recommended. Such data to be collected will be an initial baseline flyover via drone or helicopter survey to collect the above and below water surface slope

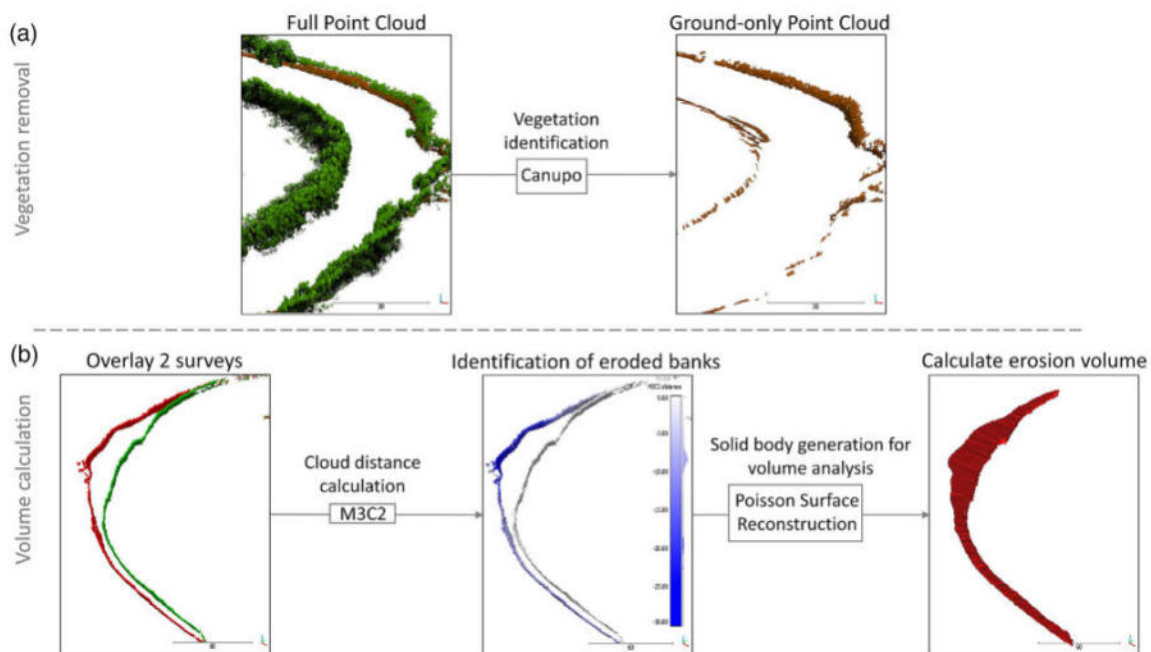
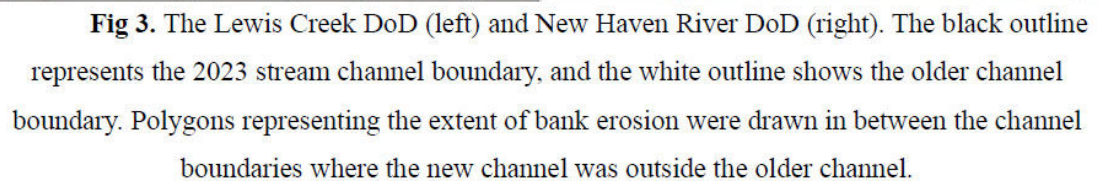


FIGURE 2 Schematic overview of the data processing workflow. Note that the bank segment shown in figure (a) (vegetation removal) differs from the bank segment shown in figure (b) (volume calculation) because areas with considerable bank erosion are generally near-vertical banks without vegetation cover—thus, different segments are best used to illustrate the two steps. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

Figure 4 Illustration of the ability of the use of LiDAR to accurately assess vegetation cover and slope/volume changes of riverbanks.

Haddadchi, A., Bind, J., Hoyle, J., & Hicks, M. (2023). Quantifying the contribution of bank erosion to a suspended sediment budget using boat-mounted lidar and high-frequency suspended sediment monitoring. *Earth Surface Processes and Landforms*, 48(14), 2920–2938. <https://doi.org/10.1002/esp.5667>



Flanzer, Zoe C., "Examining Variability in Streambank Erosion Rates in the Lake Champlain Basin, Vermont" (2024). UVM College of Arts and Sciences College Honors Theses. 129. <https://scholarworks.uvm.edu/castheses/129>

conditions. Such data can be used to identify existing slope movements and vegetative covers. Such a survey would be completed at the same frequency as the "Boat-Based Inspections" and the "Erosion Monitoring Surveys." It is also strongly recommended that the LiDAR survey be conducted on or about the effective date of the renewed FERC

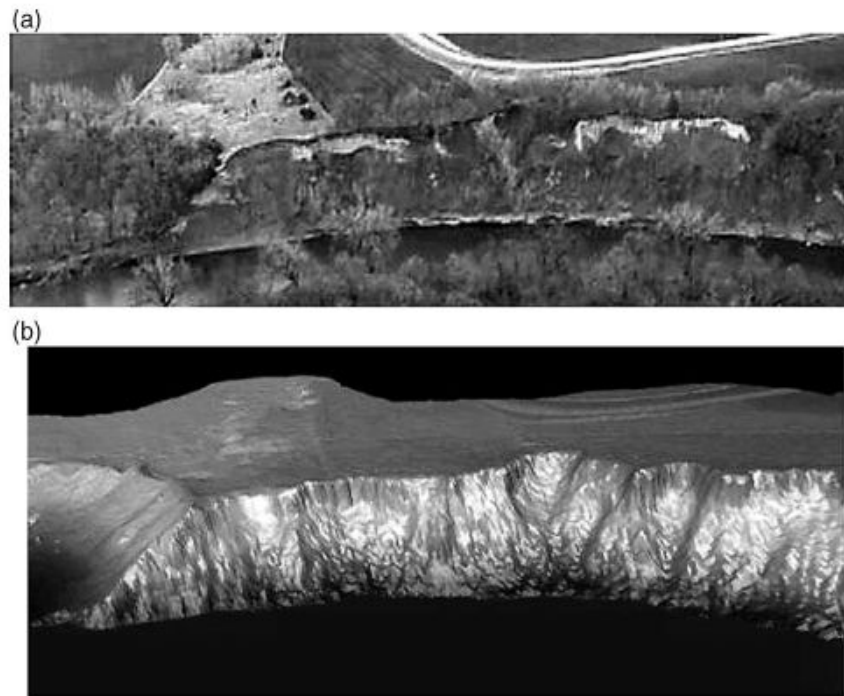


Fig. 2. (a) A severely eroded site along the Blue Earth River photographed at an oblique viewing angle from the air, and (b) rendered as a bare-earth elevation model from the LIDAR data. Vegetation was filtered and points gridded to a 1 m interval in the LIDAR image to create the model. Note gravel road passing through fallow field for scale in both figures.

Figure 6 The use of LiDAR from oblique angles to evaluate the overall stability and areas of failures on riverbanks.

Thoma, D. P., Gupta, S. C., Bauer, M. E., & Kirchoff, C. E. (2005). Airborne laser scanning for riverbank erosion assessment. *Remote Sensing of Environment*, 95(4), 493–501. <https://doi.org/10.1016/j.rse.2005.01.012>

license to obtain baseline conditions, and after significant flooding events such as flooding caused by tropical storms, nor'easters, or summer catastrophic storms such as have occurred over New England in the last two years. Subsequent years can be precisely overlain over prior years to calculate changes in slope elevations to evaluate if there is displacement or erosion of the riverbanks, as well as understanding the volume of sediment that is discharging into the TFI. Especially following significant flooding, the impacts between regional storm events versus bank instability caused by operations can be distinguished. The accuracy of LiDAR surveys is impressive, and can collect elevation

data, accurate to within 0.06 meters¹⁹, and would be much more reliable than simple, subjective observations (Figure 4, Figure 5, and Figure 6). In fact, the LiDAR technology can obtain topographic data to depths of up to 15 meters, depending on water clarity, which would provide a more complete understanding of erosion and stability occurrences.²⁰ The ability to obtain topographic data below the water surface would allow for the comparison of surveys over time, regardless of the water depth.

In consulting with remote sensing/survey firms who conduct such services, each survey, including analysis and reporting can be completed for less than \$50,000 in 2025 dollars, providing MassDEP and the public with a more comprehensive, quantitative assessment of the stability of the riverbanks and the vegetative cover that adds to river stability. Such a cost would be comparable, if not less costly than ground surveying the limited number of river sections previously completed to determine the overall stability of slopes within the subject impoundment.

In addition to monitoring using remote sensing technology, the causation of loss of vegetation, bank instability, and erosion can be corroborated by using a 2-dimension model such as the US Army Corps of Engineers, Hydraulic Engineering Center, River Analysis System (HEC-RAS).²¹ This model, which is free to the public, and a universal modeling software of river hydraulic modelers, would be used to evaluate river flow patterns because of baseflow, natural flooding, and hydropower operational changes

¹⁹ Tamimi, Rami & Toth, Charles. (2024). Accuracy Assessment of UAV LiDAR Compared to Traditional Total Station for Geospatial Data Collection in Land Surveying Contexts. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences. XLVIII-2-2024. 421-426. 10.5194/isprs-archives-XLVIII-2-2024-421-2024.

²⁰ LiDAR survey below the water surface is also referred to as "blue LiDAR", referring to the blue-green wavelengths used to obtain below water surface data.

²¹ U.S. Army Corps of Engineers. HEC-RAS River Analysis System, Version 6.6: User's Manual. Davis, CA: Hydrologic Engineering Center (HEC), 2024.

in flow patterns to compare to areas where there is found to be riverbank instability. The comparison of the model to the surveys would allow for a significantly higher level of accuracy and precision in determining whether a riverbank failure is caused by operation of FirstLight's projects or natural processes.

Comments on Stabilization and Mitigation within the Draft WQC Appendix F, Erosion, Stabilization, and Monitoring Plan

Repair & Stabilize Certain 2013 FRR Sites

The proposed plan indicates that “within 6 years of license issuance, the Licensee shall repair and stabilize all previously stabilized sites in the TFI where the 2013 Full River Reconnaissance (2013 FRR) identified erosion, and the sites have not already been repaired since 2014. These sites include bank segments 14, 371, 65, and 478 that were delineated during the 2013 FRR, equaling approximately 429 linear feet.” Although we concur that the repair of existing stabilization sites is important to improving water quality in the impoundment, stabilization projects should be reviewed by an expert panel that includes key stakeholder groups as well as FERC and MassDEP, to minimize the chance of future failures. As indicated by MassDEP “hydropower operations contribute to erosion by raising and lowering the water surface elevation more frequently and significantly than natural fluctuations.” It is related to the additional stress associated with operations that may make certain types of streambank stabilization unsuitable for TFI. For example, daily water surface fluctuations can create a stressful environment for vegetation and thus preclude the colonization and successful establishment of stabilizing vegetation. The lack of vegetation at the toe of the bank or the lower bank within the impoundment may be directly associated with stresses associated with daily water surface fluctuations.

The lower bank is typically a flat, beach-like feature that in many ways is like that of a tidal marsh where the absence of vegetation is related to the duration of inundation. As such, reliance on plant material to stabilize or assist in the stabilization of the banks of the impoundment may not, at least in some areas of the impoundment, be a viable option.

A thorough and objective understanding of the causes of erosion at a particular location is essential for the development of future designs that will provide long term stability and improve water quality.

Additional New Sites to be Stabilized

The proposed draft certification indicates that “[i]n addition to the completed stabilization projects noted above, within 6 years of license issuance, the Licensee shall implement stabilization or preventative maintenance projects at three additional sites within the TFI, which equate to an additional 667 linear feet. These sites were identified during the 2013 FRR as having the most erosion of the banks within Massachusetts that had not already been stabilized. These sites include bank segments 90, 87, and 119 that were delineated during the 2013 FRR, equaling approximately 667 linear feet.”

We concur that the stabilization contemplated for previously unrestored highly eroded banks is important to the water quality of the impoundment banks. We continue to be concerned that the design will be appropriate for the long-term stability of the banks in the face of the highly modified hydrology of the TFI. As indicated in the previous comment, it is our recommendation that MassDEP and First Light establish a stakeholder group to provide feedback on any stabilization design contemplated for the highly eroded section of the impoundment.

Future New Stabilization Sites

The proposed draft certification indicates that [s]ites that are newly identified after issuance of the license as exhibiting 'Some to Extensive' or 'Extensive' erosion based on the definitions contained within the 2013 FRR and which were not previously repaired or stabilized by anyone nor identified above in Table 1, shall be repaired and stabilized by the Licensee within 5 years of their discovery during the Erosion Monitoring Surveys or the Boat-based Site Inspection, subject to the following "limitations."

The limitations of this condition will be discussed later. The identification of newly identified erosion areas exhibiting "some to extensive" or "extensive erosion" based on definitions created in the 2013 Full River Reconnaissance Study and Quality Assurance Project Plan (2013 FRR)²² limits the types of newly eroded banks to those that have substantially more than a minimal amount of erosion and more realistically define bank failure. Based on the definitions referred to in the 2013 FRR, "Some to Extensive" erosion is assigned to those riverbanks "where the total surface area of the bank segment has approximately 40-70% active erosion present" (see Figure 3) while riverbanks with extensive erosion is assigned to those banks "where the total surface area of the bank segment has approximately more than 70% active erosion present" (See Figure 3) . This would seem to indicate that the newly identified areas erosion subject to this component of the plan would, at a minimum, fall into the 40-70% active erosion class to qualify as new and require stabilization within 5 years of their discovery. Both the "some to

²² 2013 FirstLight Full River Reconnaissance Study and Quality Assurance Project Plan. August 14, 2013. Prepared by: Simons & Associates and New England Environmental. Prepared for: FirstLight Power Resources Services, LLC c/o FirstLight Hydro Generating Company 99 Millers Falls Road Northfield, MA 01360. <https://www.northfield-relicensing.com/content/Documents/RSP%20Volume%202%20-%20Appendix%20D.pdf>

extensive” and “extensive” erosion categories shown as examples in the FRR represent areas of substantial bank instability. In order to improve the water quality of the impoundment areas of significant bank failure and erosion should not have to wait up to five years to be stabilized and warrant prioritization for stabilization.

The Draft WQC indicates one of the limitations related to the stabilization of new erosion areas is related to the amount of stabilization required and the time in which it is to be done. The draft certification states that “[t]he Licensee shall be responsible for repairing 5% of the total new bank segments identified in the intervals between each of the Erosion Monitoring Surveys (Years 2, 10, 20, and 30), regardless of whether they were identified during the above Boat-based Inspections or the Erosion Monitoring Surveys. New bank segments revealing ‘Some to Extensive’ or ‘Extensive’ erosion includes any segment not previously stabilized or in Table 1. Following each Erosion Monitoring Survey, the Licensee shall quantify the total linear feet of new bank segments that were identified either during the Erosion Monitoring Survey or during preceding Boat-based Site Inspections as exhibiting ‘Some to Extensive’ or ‘Extensive’ erosion. First, the requirements for stabilizing new erosion sites are limited to requiring the stabilization of only 5% of newly eroded riverbank. So, does this mean if a 100-foot section of extensive erosion is identified FirstLight is only responsible for stabilizing 5 feet of riverbank? If the section of riverbank identified as having extensive erosion is 1,000 feet long is the stabilization limited to 50 feet? If these examples, based on how this percentage of eroded riverbank to be stabilized is to be interpreted, then it must be understood that the remaining 95% of these eroded segments of riverbank would lack stabilization and continue to be a source of pollutants to the impoundment. With this approach it seems doubtful that improved water quality in the impoundment is attainable.

Although the Draft WQC includes a caveat that allows MassDEP to determine whether the linear foot equivalent of 5% will not provide a significantly improved stream bank condition, they may reserve the equivalent linear feet for use in the future. This approach would thus be more significant in those cases where longer sections of severe bank erosion are to remain unstabilized and serve as a continued source of sediment into the impoundment. This does not seem like an appropriate solution to improving the water quality of the impoundment.

Need for Connecticut River Stakeholder Panel

It is important that, especially as this next FERC license will be in effect for the next 50 years, periodic reviews of the latest technological advances for monitoring riverbank stability, and reviews of the effectiveness of the stabilization and mitigation measures be conducted. It is strongly recommended that a panel of stakeholders be established that would include MassDEP, FirstLight, Franklin Regional Council of Governments, CRC, Connecticut River Streambank Erosion Committee, the affected towns, their respective experts, and other parties that may be warranted. The panel would meet to coincide with monitoring events to review the current conditions of the impoundment water quality, bank stability, and erosion, and have discussions on the implementation of "state of the art" technology to ensure that the monitoring program is following.

Conclusion

As previously stated, we commend MassDEP for its understanding of the issues associated with operations and erosion in the TFI. MassDEP's inclusion of project operations as a contributing element to erosion in the TFI is important. However, compliance with the SWQS should not be based on an outdated erosion and sediment

control plan, the 2013 Full River Reconnaissance (FRR) and its Quality Assurance Project Plan. This plan is qualitative in nature and avoids the identification of issues related to operations such as the absence of vegetation and bank instability that contribute to water quality impairment. The need to implement a viable plan to address erosion and bank instability in the TFI is related to MassDEP's stewardship of the water quality within the impoundment. MassDEP's position that "project operations will continue to contribute to erosion in the TFI" is important to any plan designed to improve the water quality of this currently impaired waterbody in the future. Although MassDEP acknowledges that it is difficult to definitively quantify the causes of erosion in the TFI the Draft WQC also concludes that it is nonetheless "necessary to establish erosion-related measures in the WQC to address the existing impairments and to ensure compliance with the SWQS." The draft certificate states "SWQS require that the existing and designated uses and the necessary water quality be maintained and protected and that they be free from solids, color, and turbidity that would be aesthetically objectionable, impair any use, or impair the benthic biota or degrade the chemical composition of the bottom." However, the key to improving water quality in the impoundment in the future is related to the design and implementation of a new plan that addresses all the riverbank issues related to bank instability, lack of riparian vegetation and erosion.

The following changes and improvements must be made to ensure that the causes of riverbank instability and impacts to the water quality of the Connecticut River are understood, or the application for the MA Water Quality Certificate must be denied.

1. Develop an updated Erosion Control Monitoring Plan and QAPP that has, at a minimum, the following components:
 - a. the use of modern equipment, high accuracy survey techniques, such as LiDAR (upland survey and bathymetry²³) to replace the subjective river observation techniques in the 2013 QAPP.
 - b. a process for MassDEP to require updated survey equipment and methods as technology and riverine processes are advanced over the next 50 years.
 - c. methods and clearer references to document observed erosion features and bank stability features.
 - d. require full impoundment surveys using LiDAR obtained via UAV or helicopter surveys, with follow up localized land-based observations and surveys to further analyze areas suspected of becoming destabilized. This survey would be used to provide accurate, or at least, precise physical measurements to supplement the boat-based photo surveys, which as we described above, are subjective and inconsistent in their categorization in the existing form of the 2013 FRR QAPP. While not discussed above, in the alternative, there is boat-based LiDAR technology that could be used to

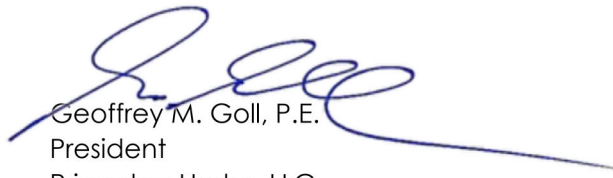
²³ Bathymetry is defined as the measurement of underwater topographic surfaces.

- survey the riverbanks, which would provide additional detail of areas where the toe of the slope has been undercut/undermined.
 - e. in addition to the already established history of the cross sections monitoring, there must be an ability to add cross sections when new areas of bank failure appear imminent or in process..
 - f. require consistent survey frequency of 3 years for the life of the FERC License, and add surveys following major flooding events, such as after hurricanes, tropical storms, nor'easters, and local storms that cause severe flooding in the TFI.
 - g. to corroborate the causes of erosion, use a HEC-RAS 2-D model that is calibrated to natural and operational flow impacts to areas identified as becoming destabilized during the surveys.
- 2. Ensure that the definition of "new erosion" in the Erosion Control Monitoring Plan is clear and expand the insignificant requirement of only requiring the stabilization of 5% of "newly eroded areas". Additionally, the surveys would be more appropriately conducted by a third-party survey/consulting firm, with expertise in fluvial geomorphology, hydraulics, and geotechnical engineering, be selected by a stakeholder panel (see recommendation 3, below) to ensure that a balanced collection of data is obtained to evaluate the causes of erosion and riverbank failure.
- 3. Create a stakeholder panel of experts, including MassDEP, FirstLight, Franklin Regional Council of Governments, CRC, Connecticut River Streambank Erosion Committee, the affected towns, their respective experts, and other parties, to review the results of surveys, recommend improvements to survey and modeling

methods, evaluate mitigation measures, and review how operations are affecting the goals of the MassDEP Water Quality Standards.

Thank you for the opportunity to comment on behalf of the Connecticut River Conservancy.

Sincerely,

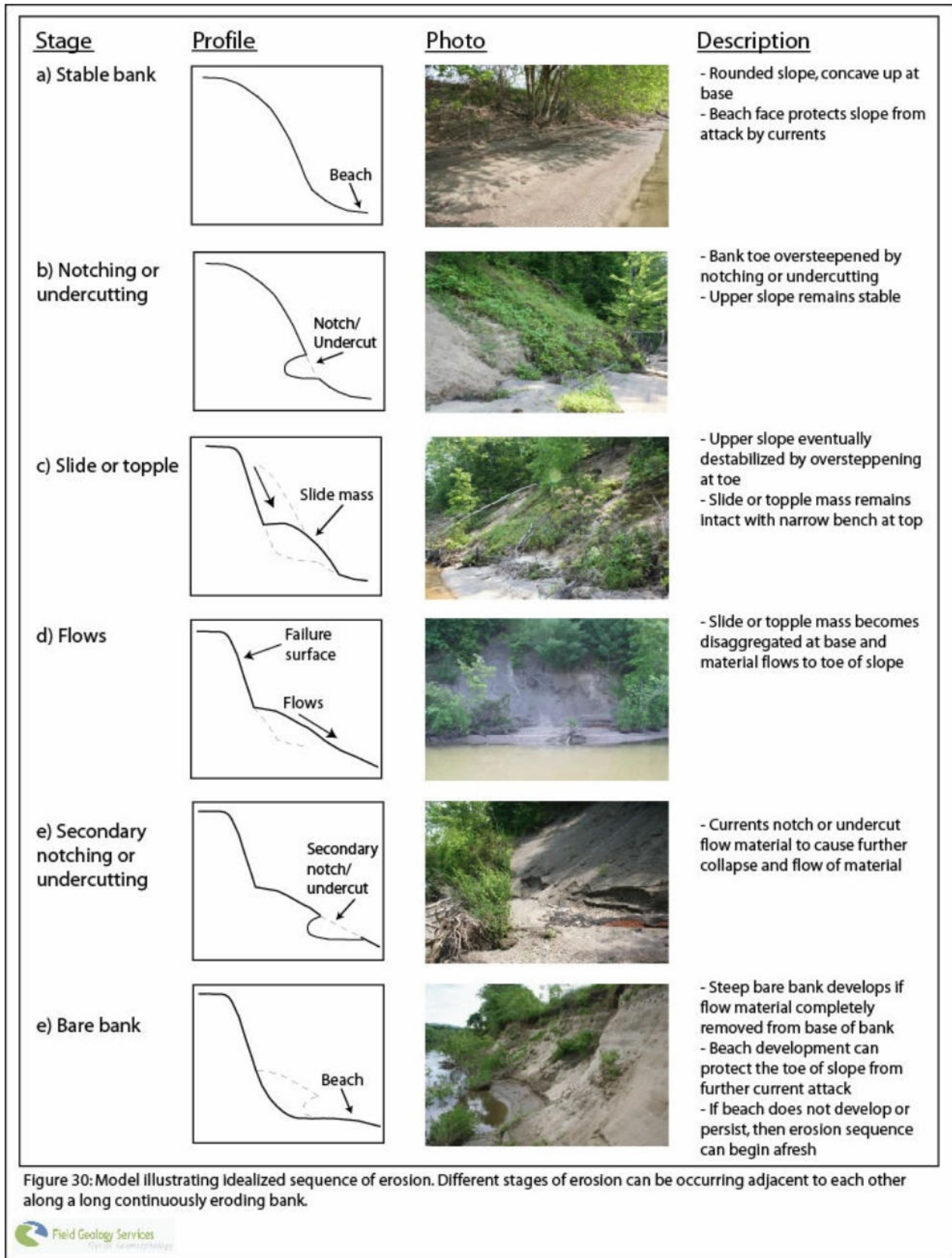


Geoffrey M. Goll, P.E.
President
Princeton Hydro, LLC



Mark Gallagher
Vice President
Princeton Hydro, LLC

cc : FRCOG



From: Ray Purington/Gill Selectboard <administrator@gillmass.org>
Sent: Tuesday, February 25, 2025 11:09 AM
To: 'DEP Hydro (DEP)'
Subject: RE: FirstLight 401 WQC draft comments of Town of Gill Selectboard
Attachments: 2025-0224_Town_of_Gill_final_comments_on_MassDEP_draft_401_WQC.PDF

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good morning,

Attached is the approved final version of the Gill Selectboard's comments on the draft 401 Water Quality Certification (WQC) for FirstLight. Other than removing the "DRAFT" watermark and deleting the extraneous fourth page, the comments are unchanged from the version submitted yesterday.

Thank you for the few extra hours of patience.

Ray

From: Ray Purington/Gill Selectboard [mailto:administrator@gillmass.org]
Sent: Monday, February 24, 2025 12:44 PM
To: 'DEP Hydro (DEP)' <DEP.Hydro@mass.gov>
Subject: FirstLight 401 WQC draft comments of Town of Gill Selectboard

Good afternoon,

Attached please find a letter with the comments of the Selectboard of the Town of Gill on the draft 401 Water Quality Certification (WQC) for FirstLight.

You will note the letter is marked "DRAFT." The Selectboard will review the letter and approve a final version of the letter at their meeting tonight at 5:30 PM. As a public body, the Selectboard must comply with the requirement of the Massachusetts Open Meeting Law. Tonight's meeting was the soonest the Selectboard could meet and still incorporate public comments and feedback made at DEP's public hearing on February 19th and the Gill Conservation Commission's public meeting on February 20th. We appreciate your consideration in this matter and will submit the final version of the Selectboard's comments Tuesday morning, February 25th.

Regards,

Ray Purington
 Town Administrator
 Town of Gill
 325 Main Road
 Gill, MA 01354
 P: 413 863 9347 F: 413 863 7775
administrator@gillmass.org www.gillmass.org

TOWN OF GILL
MASSACHUSETTS



Office of the Town Administrator

February 24, 2025

Elizabeth Stefanik
Bureau of Water Resources
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071
Turners Falls Project No. 1889-085
Comments on Draft of 401 Water Quality Certification for FirstLight

Sent electronically via email to dep.hydro@mass.gov

Dear Ms. Stefanik and the MassDEP team:

The Selectboard of the Town of Gill, through its Town Administrator, hereby submits comments on the January 24, 2025 draft 401 Water Quality Certification (WQC) for the Turners Falls Hydroelectric Project ("Turners Falls Project") owned by FirstLight MA Hydro LLC and Northfield Mountain Pumped Storage Project ("Northfield Mountain Project") owned by Northfield Mountain LLC. Collectively, we refer to the two facilities as "Projects" and the owner and operator as "FirstLight."

The Town of Gill is a community of approximately 1,550 residents and is situated on the western banks of the Connecticut River. There are 10.3 miles of river frontage in Gill, comprising the entire southern and eastern boundaries of the Town. The health of the river and its surrounds is of vital importance to the Town and those who live, work, and play here. We recognize and appreciate the diligence and informed work that went into crafting MassDEP's draft 401 WQC.

Issuance of the draft 401 WQC indicates the decade-long (fast approaching 13 years, in fact!) FERC relicensing of the Projects is inching toward the finish line. The Town, including its Conservation Commission (Gill ConCom) and Historical Commission, has been an active participant in the process since the beginning, and has been expertly assisted by the knowledgeable staff at the Franklin Regional Council of Governments (FRCOG). Both the Gill ConCom and the FRCOG will be filing their own comments on the draft 401 WQC.

Please forgive this river analogy, but the Gill ConCom's and the FRCOG's understanding of the strengths and weaknesses of the draft 401 WQC runs broader and deeper than ours. By reference, we strongly support the filed comments of both entities, and urge MassDEP to incorporate their requests and give due consideration to their suggestions. We make special note of the following recommendations:

- Allow public access to the plans and reports required by the WQC. MassDEP is to be applauded for the extra efforts it has made during this WQC process to provide opportunities for and listen

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to public comment. The Connecticut River is a line of life that proudly flows through the front yards of our region, and we are interested and passionate protectors. Please continue this laudable approach to accessibility by including in the WQC protections for public participation and public access to plans and reports.

- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): The Erosion Mitigation, Stabilization, and Monitoring Plan in Appendix F of the draft Certification recognizes decades of effort by the FRCOG and the Connecticut River Streambank Erosion Committee to monitor and mitigate erosion. However, the Condition needs to provide for and require local input and oversight by the FRCOG, Connecticut River Streambank Erosion Committee, **and** the local Conservation Commissions for the duration of the FERC license.
- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): There is no one-size-fits-all, cookie cutter approach to stabilizing and restoring erosion sites. Without a doubt, some of the methods that will be proposed and tried over the next 30-50 years of the FERC license will be experimental. It is critical this Condition requires there to be a standard of success for any future stabilization and restoration projects. The local Conservation Commissions will be able to monitor the projects against the standard of success, and with the MassDEP enforce the Orders of Conditions until success has been achieved.
- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): Limiting FirstLight's responsibility to repairing only 5% of the total linear feet of new bank erosion sites is unconscionable. Corporate use of a public natural resource such as the Connecticut River is not a right, it is a privilege. Those who benefit from such privilege owe it to society to maintain and leave the resource in a better condition than before the privileged use began. MassDEP's choice of 5% as the "magic number" has no basis and is too low.
- Special Condition 10 (Turners Falls Impoundment Water Level Management): Project-driven fluctuations in the water levels above the dam in the Turners Falls impoundment (a.k.a. "the river") have a direct impact on bank erosion, which is a significant impairment of water quality. MassDEP must include in its Water Quality Certification operating conditions that will significantly reduce river level fluctuations.
- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): MassDEP's proposed 2-mile no-wake-zone is a measure to help address shoreline erosion in that region supposedly caused by boat waves. We offer this comment with respect to erosion and with no intent to contradict any aspect of the Recreation Settlement Agreement to which the Town of Gill is a party. It is unclear what it means for FirstLight to "work with the appropriate state and federal agencies to implement...a no wake zone..." FirstLight does not have any enforcement powers and the Massachusetts Environmental Police are woefully understaffed. Posting "No Wake Zone" signs along the riverbanks of the various FirstLight-owned properties is not enough, and the WQC should require some type of significant participation in the matter by FirstLight.
- Special Condition 29 (Recreation Management Plan): The Town of Gill is a party to the Recreation Settlement Agreement filed with FERC on June 12, 2023. As such, the Town fully supports Special Condition 29 of the draft 401 WQC which calls for adoption of the Recreation Management Plan into the 401 Water Quality Certification.

Thank you for your agency's commitment to the health of our river and for the opportunity to review and comment on the draft 401 Water Quality Certification. If you have any questions, please contact me via email at administrator@gillmass.org or by telephone at 413-863-9347.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Purington', with a long horizontal flourish extending to the right.

Ray Purington
Town Administrator

CC: Gill Conservation Commission
Franklin Regional Council of Government
Senator Jo Comerford
Representative Susannah Whipps

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Ray Purington
Town Administrator
Town of Gill
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Gill, MA 01354
P: 413 863 9347 F: 413 863 7775
administrator@gillmass.org www.gillmass.org

TOWN OF GILL
MASSACHUSETTS



Office of the Town Administrator

February 24, 2025

Elizabeth Stefanik
Bureau of Water Resources
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071
Turners Falls Project No. 1889-085
Comments on Draft of 401 Water Quality Certification for FirstLight

Sent electronically via email to dep.hydro@mass.gov

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Thank you for your agency's commitment to the health of our river and for the opportunity to review and comment on the draft 401 Water Quality Certification. If you have any questions, please contact me via email at administrator@gillmass.org or by telephone at 413-863-9347.

Sincerely,



Ray Purington
Town Administrator

CC: Gill Conservation Commission
Franklin Regional Council of Government
Senator Jo Comerford
Representative Susannah Whipps

DRAFT

Transcript of testimony given by R. Purington at MassDEP public hearing on 05/30/24 regarding FirstLight's 401 Water Quality Certificate Application

Good afternoon. My name is Ray Purington and I am the Town Administrator for the Town of Gill. I am speaking today on behalf of the Gill Board of Selectmen, our Historical Commission, and our Conservation Commission.

Gill is a small town of approximately 1,550 residents and 14 square miles of land area. There are 10.3 miles of Connecticut River frontage in Gill, comprising the entire the eastern and southern boundaries of our town. A healthy river is of vital importance to our community, and to the region as a whole.

With regards to the 401 Water Quality Certification, the primary concern that needs to be addressed is erosion and siltation. During the 50 years these two projects have operated under the current FERC licenses, landowners have watched in dismay as foot after foot of shoreline, as much as 30 feet in some locations and including protected farmland, has eroded and washed away downriver. Some of the eroded soils eventually settle out in the various inlets and coves, especially the 160-acre Barton Cove located just above the Turners Falls Dam. The resulting siltation impairs the recreational use of the river for boating and fishing, and makes it easier for aquatic invasive species to take hold.

The erosion mitigation efforts required of FirstLight by the current FERC licenses have been largely unsuccessful. Furthermore, a 2009 riverbank stabilization project known as Bank Stabilization Phase III, MassDEP file # 162-68, still has not received a Certificate of Compliance from the Gill Conservation Commission. FirstLight has been made aware of this deficiency multiple times over many years, and has yet to respond or take action.

The operations that have been proposed for the new license will not resolve the erosion problems they cause. FirstLight has not proposed adequate protection, mitigation and enhancement measures to address the impairments, improve water quality, and sustain healthy aquatic habitats.

The Town strongly urges MassDEP to include conditions in its Water Quality Certification that will reduce river level fluctuations due to project operations, require an annual Full River Reconnaissance to monitor erosion and riverbank stability, require FirstLight to maintain and repair all riverbank restoration projects started and/or completed under the current licenses, and hold FirstLight responsible for minimizing and mitigating soil erosion and siltation resulting from project operations.

Thank you for your time today.

From: philg@gmavt.net
Sent: Monday, February 24, 2025 11:49 AM
To: dep.hydro@mass.gov
Cc: 'Brian Donahue'; Paul Sievert; 'Evan Fox'; 'Nona LaGrenade, Gill Admin Clerk'; 'Ray Purington/Gill Selectboard'; Susannah.Whipps@mahouse.gov; Jo.Comerford@masenate.gov
Subject: FirstLight 401 WQC comments from Gill Conservation Commission
Attachments: FirstLight-WQC-1-24-25 DRAFT_GCCedits.rtf; Letter_to_DEP_September2017.pdf

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February 24, 2025

Elizabeth Stefanik, MassDEP Bureau of Water Resources
 100 Cambridge Street, Suite 900
 Boston, Massachusetts 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071, Turners Falls Project No. 1889-085
 Gill Conservation Commission Comments on FirstLight's 401 Draft Water Quality Certificate

Dear Ms. Stefanik,

The Massachusetts Department of Environmental Protection (MassDEP) Water Quality Certification (WQC) for FirstLight Hydroelectric Project (FERC License Nos 1889 (Turners Falls) and 2485(Northfield Mountain)) needs to require input and oversight by the Franklin Regional Council of Governments (FRCOG) and Conservation Commissions in Erving, Gill, Montague and Northfield over the erosion control plan of FirstLight's operations.

MassDEP imposes Special Condition No. 25, Erosion Mitigation, Stabilization and Monitoring Plan in the draft WQC. This condition requires FirstLight to work with MassDEP to repair and stabilize existing streambank erosion, develop an Erosion Monitoring Plan, implement and report on monitoring plan, stabilize newly identified segments and create a no wake zone in Barton Cove. MassDEP acknowledges the important work and almost 30-year effort put in by the Franklin Regional Council of Governments (FRCOG) and the Connecticut River Streambank Erosion Committee to monitor and mitigate erosion. Yet, MassDEP Condition 25 does not require local input and oversight.

Under the current FERC operating license for its Northfield Mountain Pumped Storage Project, FirstLight is required to control and repair areas of riverbank erosion. Regulation and oversight of the projects to control bank erosion fall under the Massachusetts Wetlands Protection Act (WPA). In 2009, the Gill Conservation Commission, as part of its WPA responsibilities, issued an Order of Conditions (OOC) to FirstLight for streambank stabilization work (Phase III) along the Connecticut River. The intent was to establish a vegetative bench to reduce, if not eliminate, erosion. The final report for this work was submitted to the Gill Conservation Commission in 2016 by FirstLight. The GCC has not issued a Certificate of Compliance, because FirstLight has not filed WPA Form 8A – Request for Certificate of Compliance, the final step in Gill Conservation Commission's WPA oversight. The vegetative bench installed does not appear to be stable. As bank stability has not been fully achieved, FirstLight must continue monitoring and must take on any necessary remediation work.

In response to a letter sent by the Gill Conservation Commission to MassDEP requesting help with enforcement in 2017, MassDEP distinguished the WQC from the OOC, stating that while consistency is sought between the two, each has its own requirements and process for enforcement. MassDEP considered the project an in-situ pilot/demonstration and stated that “no standard or requirement was required for the success of the improvement project, just a requirement not to cause harm to the ecosystem.” MassDEP is responsible for enforcing the conditions of the WQC. As for the OOC, the local conservation commission would generally have the primary role for enforcement, although MassDEP would have concurrent jurisdiction that would allow it to enforce the document as well. For future stabilization and restoration projects approved under Special Condition 25, the Gill Conservation Commission requests that a standard of success be required, and any OOC’s that are issued be enforced by MassDEP until they achieve success.

In 2009 and 2010, the Gill Conservation Commission, paid for a Review of Phase III Bank Restoration for the Connecticut River by SEEDS and Field Geological Services (2009), and Analysis of Phase III Bank Restoration at Lower Split River Farm Along the Connecticut River in Gill, MA (2010). Both of these reports were part of our 2017 letter which is attached to our comments.

Requiring control and oversight by the Franklin Regional Council of Governments (FRCOG) and Conservation Commissions in Erving, Gill, Montague and Northfield over the erosion impact of FirstLight operations will provide consistency between the authority of MassDEP and local Conservation Commissions. Our suggested edits to Condition 25 provide that consistency.

After reviewing FRCOG’s draft comments the Gill Conservation Commission endorses their call to make Special Conditions 25 more scientifically sound and effective with specific technical details.

Our comments and suggested edits are in the attached FirstLight-WQC-1-24-25 DRAFT_GCCredits document.

Sincerely,
Phil Gilfeather-Girton
for the Gill Conservation Commission

Appendix F

Erosion Mitigation, Stabilization, and Monitoring Plan

Erosion Mitigation, Stabilization, and Monitoring Plan

Repair & Stabilize Certain ~~Previously Stabilized~~ 2013 FRR Sites: Within 6 years of license issuance, the Licensee shall repair and stabilize all ~~the~~ previously stabilized sites ~~shown in Table D-1 below in the TFI where the 2013 Full River Reconnaissance (2013 FRR) identified erosion and the sites~~ have not already been repaired since 2014. These sites include bank segments 14, 371, 65, and 478 that were delineated during the 2013 FRR, equaling approximately 429 linear feet. *See Table D-1 below.*

~~Additional New Sites to be Stabilized~~Repair and Stabilize New 2013 FRR Sites: In addition to the ~~completed~~ stabilization projects noted above, within ~~62~~ years of license issuance, the Licensee shall ~~repair and stabilize all the New Sites shown in Table D-1 below implement stabilization or preventative maintenance projects at three additional sites within the TFI, which equate to an additional 667 linear feet.~~ These sites were identified during the 2013 FRR as having the most erosion of the banks within Massachusetts that had not already been stabilized. These sites include bank segments 90, 87, and 119 that were delineated during the 2013 FRR, equaling approximately 667 linear feet. *See Table D-1 below.*

Table D-1. Specific Stabilization Sites

Bank Segment⁷⁰	River Station (approx.)	Segment Length (ft.)	Previously Restored Site	Restoration Site Name
<i>New Sites</i>				
90	320+00	62	No	N/A
87	300+50	208	No	N/A
119	400+50	397	No	N/A
Sub-Total		667 ft		
<i>Previously Stabilized Sites</i>				
14	70+00	145	Yes	Montague
371	50+50	37	Yes	Campground Point
65	240+50	147	Yes	River Road
478	570+00	100	Yes	Bennett Meadow
Sub-Total		429 ft		

Erosion Control Monitoring Plan: Within 1 year of license issuance, the Licensee shall consult with and obtain written approval from MassDEP, Franklin Regional Council of Governments (FRCOG,) and the municipalities of Montague, Gill, Northfield, and Erving to develop an Erosion Control Monitoring Plan that sets forth the methods and procedures for documenting shoreline erosion for the term of the license and conducting the surveys and inspections discussed below. The Erosion Control Monitoring Plan shall be implemented beginning in year 2 of the new license with the baseline survey.

Erosion Monitoring Surveys (Years 2, 10, 20, and 30): Within 2 years of license issuance, the Licensee shall conduct an initial Erosion Monitoring Survey of the TFI within Massachusetts to serve as a baseline. This baseline survey and the subsequent 10, 20, and 30 year monitoring surveys must, at a minimum, comply with the Quality Assurance Project Plan (QAPP) that was established for the 2013

⁷⁰ Bank segment ID corresponds to the TFI bank segments delineated during the 2013 FRR.

FRR or any subsequent QAPPS. Erosion Monitoring Survey's shall consist of boat-based reconnaissance surveys of the Massachusetts portion of the TFI. During the boat-based survey, a field crew shall delineate bank segments based on common bank features, characteristics, and erosion conditions as defined in the Erosion Monitoring Plan. The field crew shall also collect video of the banks during the survey. The Erosion Monitoring Surveys shall occur in November during leaf-off conditions.⁷¹

Following the completion of each Erosion Monitoring Survey, the Licensee shall prepare a report summarizing the survey methods and results and submit it to MassDEP, FRCOG, and the municipalities of Montague, Gill, Northfield, and Erving for review and approval in the first quarter of the year following the Erosion Monitoring Survey. The report shall also identify new and previously repaired bank segments needing stabilization or preventative maintenance. Once approved, the report shall be filed with FERC.

Boat-Based Inspections (Years 4, 6, 8, 12, 15, 25, 35, 45): Boat-based site inspections of the TFI shall be conducted in Years 4, 6, 8, 12, and 15 in November during leaf-off conditions. After Year 15, the boat-based site inspections shall be conducted in Years 25, 35 and 45. The boat-based inspections shall include visual observation of all TFI bank conditions within the Massachusetts portion of the TFI, maintenance inspections of previously stabilized sites, geo-referenced videotape coverage of the entire TFI shoreline, and development of a summary memo and maps detailing the results of the inspection, including any new erosion, and any new erosion that was not part of a previously stabilized site or in Table 1. The level of detail of the video shall be sufficient to observe any visual indicators of potential erosion, including absence of vegetation, exposed tree roots, visible gullies or rills, muddy runoff water, large areas of > 9 square feet, bare soil, collapsing stream banks, sediment deposits, and a noticeable change in shoreline position. The summary memo, geo-referenced videotape coverage, and maps shall be provided to MassDEP FRCOG, and the municipalities of Montague, Gill, Northfield, and Erving for review and approval in the first quarter of the year following each Boat-based Site Inspection. The summary memo shall include a repair and maintenance plan, as needed, for sites requiring repair or preventative maintenance.

The boat-based site inspections component of the Erosion Control Monitoring ~~Plan that the Licensee develops with MassDEP for these boat-based site inspections~~ shall comply with the recommendations and protocol developed by Dr. John Field, Field Geology Services (Farmington, ME) in July 2011, in a report titled "Detailed Analysis of the 2008 Full River Reconnaissance of the Turners Falls Pool on the Connecticut River, Prepared for Landowners and Concerned Citizens for License Compliance Turners Falls Pool."⁷²

Previously Stabilized Site Repair: Except as noted otherwise below, within ~~52~~ years of discovery during the Erosion Monitoring Surveys or the Boat-based Site Inspections, the Licensee shall repair and stabilize all previously stabilized sites requiring maintenance or repair that exhibit 'Some to Extensive' or 'Extensive' erosion based on the definitions contained within the 2013 FRR, in addition to the sites identified in Table D-1.

⁷¹ These 10-year surveys shall continue until expiration of the license, and thus shall be conducted in years 40 and 50 if the license lasts that long.

⁷² These measures include: (1) having clear definitions and examples for bank features, characteristics, and erosion conditions to ensure consistency between future surveys and to assist the survey crew with clearly identifying bank

conditions, (2) identifying the types of erosion, indicators of erosion, and stage of erosion, and (3) including a detailed photo log. The Plan shall also include examples so that the methodology will be easily repeatable from survey to survey to ensure the results are comparable. Establishing a clear foundation from which all future surveys shall be based on will ensure consistency over the license term

The Licensee shall not be responsible for repairing previously stabilized sites that are damaged by high flow or ice conditions unless prior to the high flow or ice event the site was previously categorized as having “some to extensive” or “extensive erosion” and the site had not been repaired or stabilized. “High flow conditions” shall be defined in the Erosion Control Monitoring Plan as at least 100,000 cfs, measured at the USGS Gage on the Connecticut River at Montague City, MA.

Future New Stabilization Sites: Prior to the Erosion Control Monitoring Plan to be implemented beginning in year 2 of the new license with the baseline survey, mentioned above, sites Sites that are newly identified after issuance of the license as exhibiting ‘Some to Extensive’ or ‘Extensive’ erosion based on the definitions contained within the 2013 FRR and which were not previously repaired or stabilized by anyone nor identified above in Table 1, shall be repaired and stabilized by the Licensee within 5-2 years of their discovery. Once the Erosion Control Monitoring Plan to be implemented beginning in year 2 of the new license with the baseline survey, mentioned above, has been implemented and is in force, sites that are newly identified, shall be repaired and stabilized by the Licensee within 2 years of their discovery during during the Erosion Monitoring Surveys or the Boat-based Site Inspections, subject to the following limitations:

Sites that shall not be considered for repair and stabilization are those can be shown to have almost no chance to be the result of the Licensee’s operations, less than 5% probability, as represented in the most current Erosion Control Monitoring Plan, Erosion Monitoring Survey or Boat-based Site Inspection, such as, that exhibit unique conditions that are causing the erosion. These sites are limited to those where erosion is being caused by adjacent bridges and tributary mouths; sites where upland management activities having unique conditions are directly impacting erosion processes; Barton Cove where boat waves contribute significantly to erosion; and islands. Bank segments where upland land management activities are identified as resulting in unique conditions causing erosion are those segments where erosion is present and caused by: (1) agricultural activity or other development that is occurring to the edge of the bank with minimal to no riparian buffer (i.e., a riparian buffer that is less than 15 ft. in width), (2) agricultural activity that is occurring along the bank (e.g., livestock climbing up and down the bank from the field to the river), (3) irrigation infrastructure, (4) boat docks, or (5) other non-project related manmade activity that is directly resulting in erosion. In addition, although not man-made, the presence of sensitive wildlife receptors shall also be considered as part of determining the extent to which the site should be stabilized (e.g., bank swallow, belted kingfisher, and bald eagle nesting).

Following the Licensee responsibility described in the first two paragraphs and Table D-1 above, tThe Licensee shall be responsible for repairing 5% (Please include a scientific justification for this percentage, or increase it. At this rate it would take 20 years to repair a single newly identified erosion segment.) of the total new bank segments identified in the intervals between each of the Erosion Monitoring Surveys (Years 2, 10, 20, and 30), regardless whether they were identified during the above Boat-based Inspections or the Erosion Monitoring Surveys. New bank segments revealing ‘Some to Extensive’ or ‘Extensive’ erosion includes any segment not previously stabilized or in Table 1. Following each Erosion Monitoring Survey, the Licensee shall quantify the total linear feet of new bank segments that were identified either during the Erosion Monitoring Survey or during preceding

Boat-based Site Inspections as exhibiting ‘Some to Extensive’ or ‘Extensive’ erosion. The Licensee shall determine how many linear feet 25% of the total equates to and identify potential stabilization projects that equate to that length. The Licensee ~~and MassDEP~~ shall consult with and obtain written approval from MassDEP, FRCOG, and the municipalities of Montague, Gill, Northfield, and Erving on what bank segments, representing the 25%, are to be stabilized. The 25% shall account for stabilization work that the Licensee performed on new sites in between each Erosion Monitoring Survey. This 25% shall not include previously repaired sites ~~or sites in Table 1~~ that may require maintenance. If MassDEP determines that the linear foot equivalent of 25% will not provide a significantly improved stream bank condition, MassDEP may reserve the equivalent linear feet for use in the future.

Barton Cove. FirstLight shall work with the appropriate state and federal agencies to implement within five years of license issuance a no wake zone from the Turners Falls Dam (Station 0+00) to where the TFI narrows upstream of Barton Cove (Station 110+00) to address the impact of boat waves on shoreline erosion.

September 2017

Brian Harrington, Director, Water Resources
Western Region Office
MA Department of Environmental Protection
436 Dwight Street
Springfield, MA 01103

Re: Wetlands Protection Act compliance

Dear Mr. Harrington:

The Town of Gill Conservation Commission (GCC) is writing this letter to bring to your attention significant water quality issues connected to both current and long-term use of the Connecticut River by FirstLight Hydro Generating Company (FirstLight) and its successor.

Under the current FERC operating license for its Northfield Mountain Pumped Storage Project, FirstLight is required to control and repair areas of riverbank erosion. Regulation and oversight of the projects to control bank erosion fall under the Wetlands Protection Act (the Act). To date there have been five bank stabilization projects in Gill (see Appendix 1, FERC Scoping Meeting presentation showing extent of erosion and a map of Gill riverbanks). The Gill Conservation Commission has not issued a Certificate of Compliance for any of the Phase III Restoration Sites; no mention of this is made in FirstLight's "2016 Year-End Report, Bank Stabilization Phase III (Report)". The Report, prepared by New England Environmental and submitted December 21, 2016 to both the GCC and the DEP Western Region Office, states that all is well except for needed invasive abatement and that their monitoring is drawing to a close. The Report also states:

"There has been very little natural sediment deposition from spring freshets/storm events. The restoration design, in part, depends on sediment trapping to build up the bench and protect the adjacent bank face. The project sites continue to stabilize and new vegetation is established each year. There have been no significant changes to bank stability at these three sites during 2016." (Executive Summary).

In the conditions set forth in the Order of Conditions issued by the GCC prior to project construction, *the aquatic bench/construction road was to be fully vegetated to stabilize the project.*

The GCC has not issued a Certificate of Compliance for the 2009 first Phase III reconstruction site (Split River Farm) because the bench created to control bank erosion does not appear to be stable at the downstream end. As bank stability has not been fully achieved, FirstLight must continue monitoring and also must take any necessary remedial action until a Certificate of Compliance is received for this and other Phase III sites.

The bio-engineering approach to bank stabilization – which the GCC strongly supports – was deemed from the beginning to be experimental, and outcomes could be expected to be uncertain; while there have certainly been successes, the Split River Farm Site has been particularly challenging because of its position opposite the Northfield tailrace. Relicensing study 3.3.9, appendix B (velocity), shows that this section is subject to dynamic swirling patterns that inevitably impact restoration projects. Recommendations prior to construction were submitted to FirstLight in 2009 from a SEEDS (Ecology + Education + Design) Review that was commissioned by the GCC. In short, a more robust treatment was recommended with a more substantial anchoring technique for these Phase III reconstruction sites near the tailrace in “...one of the most dynamic areas in the Turners Falls pool, with back eddies created by the water releases from the pumped storage facility.” (See Appendix 2, SEEDS excerpt).

The GCC has conducted numerous meetings, walks, site-visits with FirstLight, and while there has been verbal acknowledgement of the problems the bank in question poses, we have not seen the problem addressed in end-of-year reports or photographs.

For instance, the photos in the 2016 Monitoring Report fail to show the areas of the downstream end of the Lower Split River Site completed in 2009 with their fully exposed roots wads with attached trunks that are supposed to be buried under the aquatic bench/construction road. The downstream end of the Bathory/Gallagher site that was completed in 2013 also shows fully exposed root wads with their trunks attached, as well as cables that have rusted and loosened, duckbill anchors that have been lost, and trunks that have become dislodged. It appears that FirstLight has not been fully monitoring the Phase III sites as required in the Order of Conditions (see Appendices 3 & 4, photos of Phase III sites).

There has never been a comprehensive or detailed corrective plan of action. As a result, the GCC continues to have concerns that in the event we sign-off on a Certificate of Compliance, all further problem-solving efforts will cease, and FirstLight will consider itself absolved from responsibility to the banks.

FERC Relicensing Concerns

The GCC is concerned about the next 30-50 years of the new FERC license, not just the five-year monitoring cycle required for the Phase III restoration projects.

As DEP is aware, the Pumped Storage and Turners Falls hydro projects are nearing completion of relicensing by FERC. Relicensing Study 3.1.2 on causes of erosion basically states that FirstLight has minimal responsibility for erosion in the Pool. GCC and other stakeholders question that conclusion based on four decades of empirical data. Left unchallenged, the assertion would undo decades of FERC rulings on licensee responsibility for control of erosion in the pool.

An Erosion Control Plan (ECP) was finalized by FERC in 1999 for the licensee of the Turners Falls and Northfield Mountain Hydroelectric Projects to address the severe riverbank erosion in the Turners Falls Pool of the Connecticut River. In the years since the 1999 ECP, FERC has ruled that the licensee is responsible for the erosion in the Pool no matter what the cause. While

multiple causes of erosion are recognized (such as the daily fluctuations from the operation of Northfield Mountain, the spring freshet of high water, other high-water events, and boat wakes), it has been held by area agencies and hired consultants that daily water level fluctuations are a primary cause of erosion. The Turners Falls Pool has in effect become a tidal river.

The long-term health of the riverbanks needs to be a primary focus of the relicensing process as it affects water quality, aquatic and terrestrial habitats, prime farmland, structures, and more. The value of these resources is the reason the GCC feels compelled to write this letter.

The Gill Conservation Commission, like all such small-town commissions, is in an untenable position. We witness erosion with our own eyes and listen to the complaints of old-timers who have fished these banks for decades. Visitors to the river often think the river is tidal as they observe the dramatically fluctuating levels. Our dilemma is that we do not have the resources to refute FirstLight's study conclusions, and so we are left wondering how to responsibly continue to conserve our banks and our river.

In addition, climate change has the potential to bring major weather events that could undermine even the best of the restoration projects. Our town can't afford erosion control at the level met by the hydropower company. Finally, the GCC is a governing body made-up of five volunteers with varying degrees of education in environmental issues.

We depend on and need the continued support of DEP as we carry out our responsibilities under the Wetlands Protection Act. The GCC asks for MA DEP's assistance in ensuring that the important issues of long-term monitoring and repair of FirstLight's restoration efforts in the Town of Gill be comprehensively addressed now and in the new license. We also urge DEP to utilize its authority under Section 401 of the Clean Water Act to require the new licensee to ensure that the water quality, aquatic and terrestrial habitats, prime farmland, and banks of the Connecticut River are fully protected.

One thing of note in the 401 Water Quality Certificate issued for the Phase III project is the requirement for a Corrective Plan of Action if the monitoring shows that the "restoration project has unintended detrimental consequences to the physical and biological integrity of the aquatic ecosystem of the CT River ..." (condition #15 on pages 7 and 8.) Is it too late to ask for this? We would appreciate your feedback on this. Also, on p. 4 there is a note that the Certificate expired in 2011. Was it extended?

Also unclear is the wording of the NOI dated April 15, 2009:

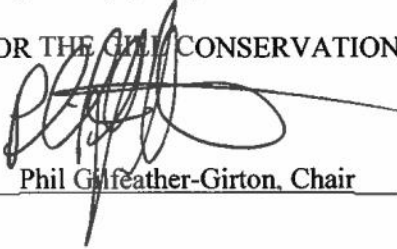
"Monitoring is proposed for five years after installation at the intensity described below, and FirstLight will continue to monitor the sites through cross-sectional surveys afterwards. First Light and NEE propose to monitor the success of this bank stabilization technique through the installation of permanent monitoring stations. Monitoring will occur as noted in the descriptions below. Each station will have: cross-sectional surveys, scour chains, bank pins, stakes for measuring sediment, permanent photo stations, vegetation plots, structural inspections, and year-end report." (Section 10, p. 29)

We are uncertain as to what 'afterwards' means—does it mean for the entire length of the new license? Will this monitoring include sending the GCC a report of findings, and will there be corrective action taken if needed? We would appreciate your feedback on this as well.

Thank you for your attention to the Gill Conservation Commission's issues of concern regarding protection of the Connecticut River. We invite and offer our assistance for site visits by DEP staff to observe first-hand the water quality problems we are bringing to your attention. Also, the GCC offers to meet with you and your staff at your office to discuss the issues raised in this letter.

Respectfully yours,

FOR THE GILL CONSERVATION COMMISSION



Phil Gilfeather-Girton, Chair

Attachments (Appendices 1-4)

Cc: Bethany Card
 Daniel Sieger
 Lealdon Langley
 David Foulis
 David Cameron
 Mark Stinson
 Bob Kubit
 Keith Barnicle
 Kimberly Noake MacPhee, FRCOG
 Chris Chaney, FERC
 Andrea Donlon, CRC
 Andy Fisk, CRC
 Tom Miner, CRSEC
 Ray Purington, Admin. Town of Gill

**FERC Scoping Meeting
January 30, 2013
Relicensing of Northfield Mountain Pumped Storage Project**

Michael Bathory, presenting landowner representing Maryanne Gallagher, Alan Wallace, and Barbara Watson River Road conservation land owners. Conservation Restrictions held by the Massachusetts Department of Conservation and Recreation in Gill, Massachusetts. Flowage rights held by the landowners.

These landowners are members of Landowners and Concerned Citizens for License Compliance (LCCLC) and the Connecticut River Streambank Erosion Committee. They are assisted by the Connecticut River Watershed Council which serves as a nonprofit umbrella organization for LCCLC.

Michael Bathory and Maryanne Gallagher

[REDACTED]

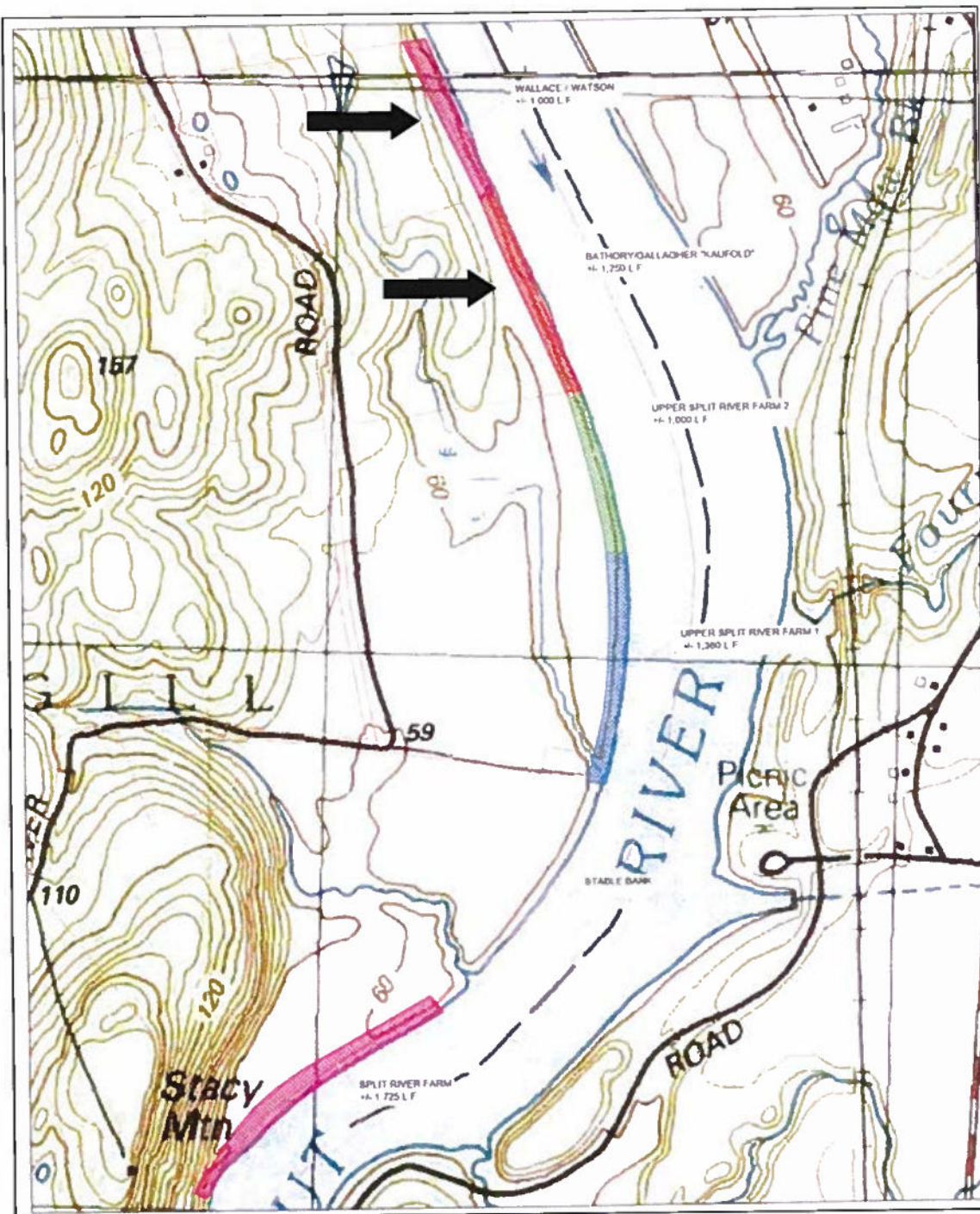
Gill, Massachusetts 01354

Alan Wallace, and Barbara Watson

[REDACTED]

Gill, Massachusetts 01354

Arrows indicate the Wallace/Watson and Bathory/Gallagher sections of riverbank upstream from Northfield Mountain picnic area and tailrace.





Phase III Bank Restoration for the Connecticut River
in the Town of Gill, Massachusetts
Bathory/Gallagher & Wallace/Watson
Conservation Land



Construction access road
as seen during October 5, 2012 Relicensing Site Tour.

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Year 1 construction on Bathory/Gallagher and Wallace/Watson riverbanks December 2012. Year 2 to be completed in Fall 2013.



Attempts to buttress eroding Bathory/Gallagher banks, December 2012.⁵



Examples of erosion on Bathory/Gallagher riverbank
as seen from construction road, December 2012.

6



7

More examples of erosion on Bathory/Gallagher riverbank
as seen from construction road, December 2012.



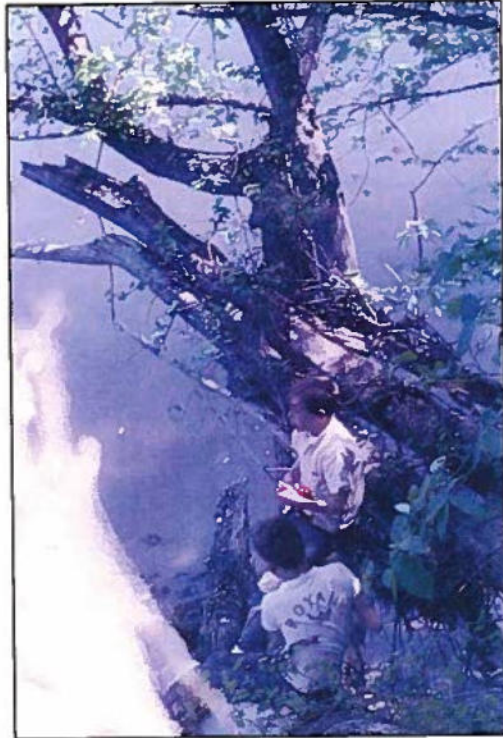
Examples of erosion on Wallace/Watson riverbank
as seen from construction road, December 2012.
Arrows indicate tree stump seen in next set of photos.

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Photos of tree at toe of bank in 1960 and the stump of the same tree in 2012 demonstrating the erosion that has occurred over 52 years.



Review of Phase III Bank Restoration for the Connecticut River

Gill, Massachusetts

Submitted to:

Gill Conservation Commission Town of Gill 325
Main Road Gill, MA 01354

Submitted by:

SEEDS 11 Birchwood Ct. South Burlington, VT
05403

and

Field Geology Services P.O. Box 985 Farmington,
ME 04938

June 30, 2009

Aquatic vegetation

The design calls for thousands of individual aquatic plants to be placed in shallow fill between the coir log and the base of the slope. While the intent is for the vegetation to stabilize the beach face and trap additional sediment, we are concerned that the addition of less than 1 foot of fill, a single coir log, and the relatively low density of wood additions will be insufficient for the vegetation to survive in what is now an unvegetated area subject to frequent inundations and high wave energy. Given that numerous individual logs are to be buried just beneath the beach surface, the fate of vegetation just

above the logs is unclear; will the logs encourage or discourage growth? The design accounts for some plant mortality by stating that “dead plant material (is) to be replaced”. However, no estimate is given

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regarding the expected mortality rate and no indication provided if a budget is available for replanting in subsequent years.

p.14 Overall stability

The success of the project, as designed, is contingent on the effective trapping of beach sediments. Because the individual logs are mostly buried below the beach surface, we do not suspect that they will effectively trap sediment. In riverine environments, deflector-type logjams or rock deflectors often promote sedimentation along the bank edge directly downstream from the structure. However, at this location, given the dominant sediment size, the daily fluctuations in stage, currents directed toward the bank rather than parallel to the bank, and the wave action, we do not expect that the large woody debris structures will promote sedimentation outside of the boundaries of the structure. Likewise, our observation of natural deflectors along the project reach (e.g., rock outcrops and wood accumulations) did not demonstrate any sediment trapping along the downstream bank edge.

p.19 Discussion

Field (2007) recommended experimenting with woody debris

additions as a means for stabilizing eroding banks throughout the Turners Falls Pool and for accumulating sediment on beach surfaces. The proposed project site is one of the most dynamic areas in the pool, with back eddies created by water releases from the pumped storage facility, and, as such, does not represent an ideal area to experiment with various methods for using wood to trap sediment on the beach surfaces. We applaud NEE's efforts to incorporate woody debris into the bank stabilization design and thereby eliminate the use of an unnatural rock toe. We believe with some changes to the current design, wood can be used to effectively stabilize the eroding banks in the given setting (Appendix 1). While the alternative design concept must undergo a more thorough engineering analysis and design process before being implemented, we believe the concept of a log toe will ensure bank stability while different methods could be tested between the log toe and beach-edge toe to determine the methods that best result in the accumulation of sediment on the beach face. If the experimentation

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identifies a method that reliably accumulates sediment, future projects may be able to do away with the log toe protection. We would be happy to work with New England Environmental or other organizations involved in designing and permitting this project in order to further develop our alternative design concept into construction ready engineering designs.

Analysis of Phase III Bank Restoration at Lower Split River Farm Along the Connecticut River in Gill, MA

Prepared for

Gill Conservation Committee Gill, MA

Prepared by

Dr. John Field Field Geology Services Farmington,
ME

October 2010

EXECUTIVE SUMMARY

An analysis of the Phase III bank restoration at Lower Split River Farm along the Connecticut River in Gill, MA was undertaken to ascertain the potential to stabilize eroding banks using large woody debris within the Turners Falls Pool. The project, constructed in Fall 2009, consisted of a line of root wads spaced 15 to 20 ft apart and placed on the beach face approximately 20 ft from the bank toe. Gravel and other sediment was placed behind the root wad line as an access road but, after construction was left on the beach, covered with erosion control fabric, and planted with aquatic vegetation. Small log jams were placed between the bank and the

root wad line while logs stacked parallel to the bank were placed discontinuously along the bank toe. Large embayments in the bank created by previous slumping were filled with logs such that the root wads were aligned with the bank on either side. The intent of the project as a whole was to aggrade the beach face, or at least preserve the added beach sediment, so water level fluctuations experienced during operation of the Northfield Mountain Pumped Storage Project would be less likely to inundate the bank toe and destabilize the bank.

While the individual root wads, log jams, and stacked log structures on the bank toe remain largely intact after one year, the project has not successfully induced sediment deposition. In fact, almost 10 ft of the added beach sediment behind the line of root wads has been eroded along the length of the entire project with the erosion control fabric and planted vegetation largely removed in these areas. Since the erosion has not yet reached the bank toe, no signs of active erosion are present along the bank toe. The lack of bank erosion, however, should not be construed as an indication of long-term project success, because erosion of the added beach sediment is likely to accelerate once the Northfield Mountain Pumped Storage Project returns to normal operations after a long hiatus that began in May 2010. If the erosion progresses to the bank toe, undercutting of the bank will ensue and the bank destabilized, initially along those portions of the bank not treated with stacked logs.

Given the lack of sediment deposition occurring at the Lower Split River Farm site where the wood additions are widely distributed and in poor contact with the beach face, future projects should concentrate the wood closer to the bank toe to increase the density of wood without greatly increasing the total amount of wood needed for each project. The wood would best be organized in closely spaced log jams attached to the bank to divert high velocity flood flows towards the center of the river and encourage

deposition in the gaps between the jams. The treetops, not utilized at the Split River Farm site, can be woven into the log jams, so the attached branches, leaves, and needles can increase the wood contact on the beach face and encourage deposition within the log jams. Future projects should also incorporate log crib walls between the log jams to prevent erosive forces that act nearly perpendicular to the bank line (i.e., boat wakes and water level fluctuations) from undermining the toe. The crib walls will be similar to the stacked logs used at the Lower Split River Farm but should be continuous along the bank and anchored with vertical log piles rather than with steel cables and duckbill anchors. Each project site consists of unique features, so the exact number and distribution of the logs and treetops to be used will vary, but long-term project success will, in all cases, depend on maximizing wood densities near the bank toe and the amount of woody surface area contacting the beach face.

Lower Split River Farm site , July 19, 2016
Looking South from access path at south end of site



Lower Split River Farm site , July 19, 2016
Looking North from access path at south end of site



Lower Split River Farm site , July 19, 2016
Walking North from access path at south end of site



Lower Split River Farm site , July 19, 2016
Walking South from access path at south end of site



Lower Split River Farm site , July 19, 2016
Walking North from access path at south end of site

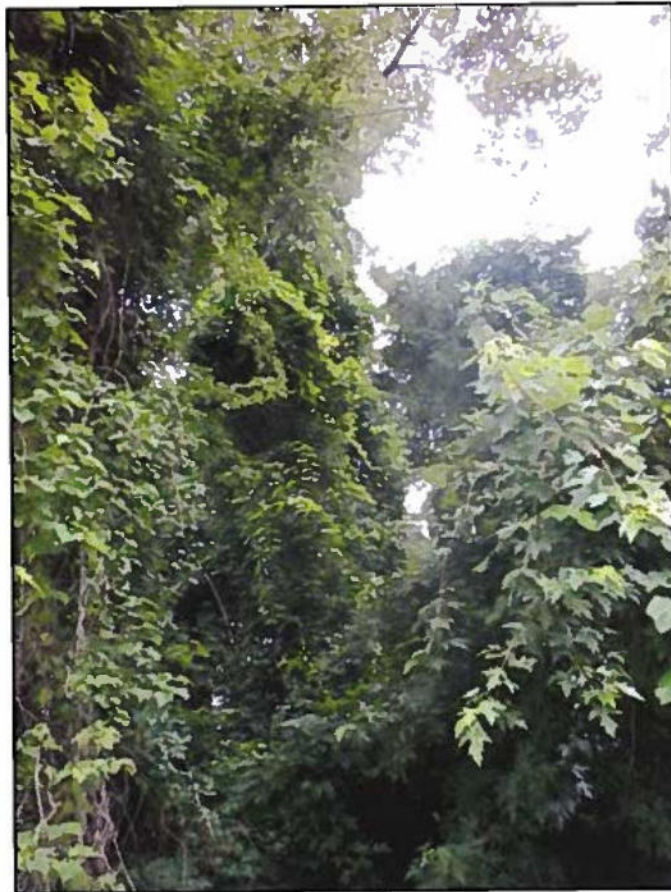


Lower Split River Farm site ,
July 19, 2016

Walking North from access
path at south end of site

Example of invasive vines
growing over streambank
vegetation

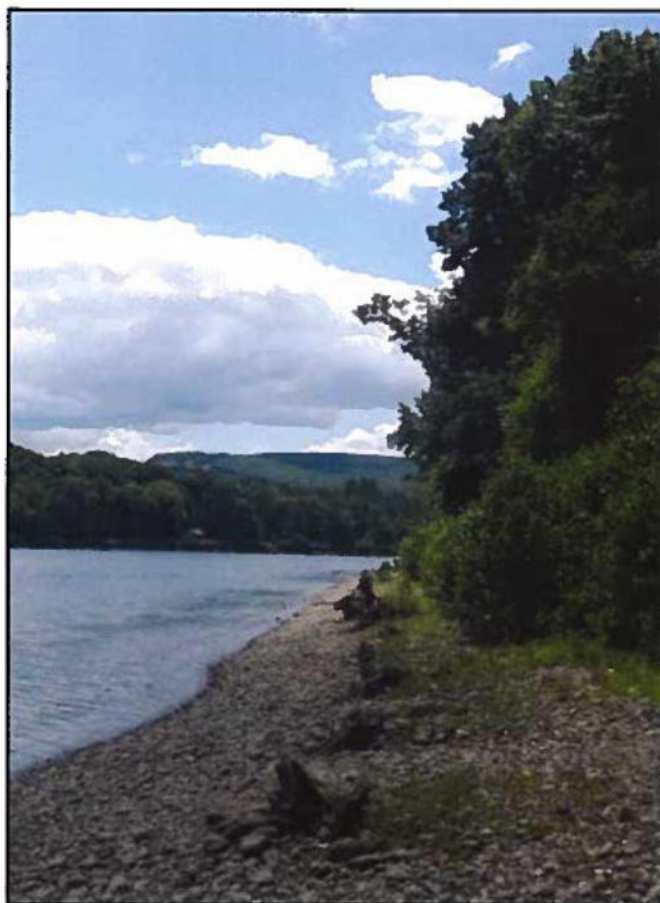
Upper area of bank



Lower area of bank



Upper Split River 2 site , July 19, 2016
Looking South from access path at north end of site



Bathory/Gallagher and Wallace/Watson sites

July 19, 2016

Bathory/Gallagher site photos of:

- Exposed root wads with trunks that were buried in the aquatic bench/construction road
- Lack of sediment deposition
- Minimal plant growth on bench
- Loose and dislodged duckbill anchors
- Log jams with invasive plant growth

Wallace/Watson site photos of:

- Vegetation growth along the bench as it recedes from the river and the river is directed away from the shore by a rock outcropping at the north end of this site
- Loss of historic lower terrace

Bathory/Gallagher site: View north from near access road
Exposed trunks and negative accumulation of sediment



Bathory/Gallagher site: Experimental approach

Root wads and logs placed parallel to river resulting in minimal vegetation growth



Bathory/Gallagher site: Experimental approach

Root wads and logs placed parallel to river resulting in minimal vegetation growth



Bathory/Gallagher site: Gauges indicate negative to minimal sediment accumulation



Bathory/Gallagher site: Exposed trunks with minimal plant growth



Bathory/Gallagher site: Duck bill anchor failures



Detached anchor



Loose anchor wire and missing log

Bathory/Gallagher site: Duckbill anchor failures



Missing log

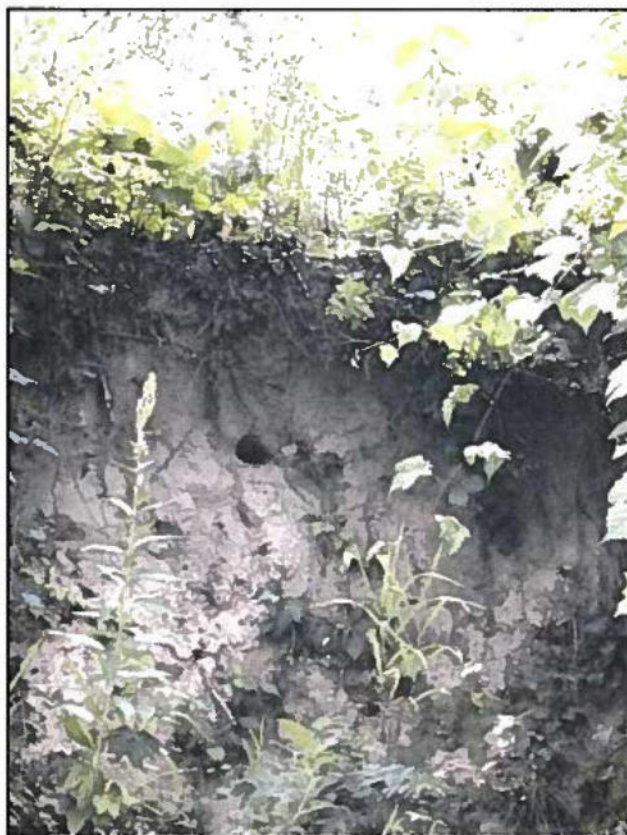


Loose anchor wire

Bathory/Gallagher site: Log jams with invasive plant growth



Bathory/Gallagher site: Bird nest hole?



Wallace/Watson site: thicker vegetation growth along bank south of the rock outcropping at the north end of the site



Wallace/Watson site: Exposed tree stump at south end of site was on the bank of the lower terrace prior to start of 1972 pump storage project. Horizontal log caught on the stump during 2016 spring freshet.





HINGHAM MUNICIPAL LIGHTING PLANT

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General Manager
Thomas Morahan
tmorahan@hmlp.com

Laura Burns, Chairman
Michael Reive, Vice-Chair
Tyler Herrald, Secretary

2/18/25

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085 FirstLight 401 WQC
Comments

Dear Commissioner Heiple:

Hingham Municipal Lighting Plant offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations. Together, the Projects play a critical role in delivering clean, local, cost-competitive power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

Hingham Municipal Lighting Plant has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, cost-competitive power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

Hingham Municipal Lighting Plant applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River and enables the Projects continued role in serving communities across New England that depend on FirstLight's clean electricity generation.

Sincerely,

Thomas Morahan
General Manager
Hingham Municipal Lighting Plant



February 21, 2025

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085 FirstLight
401 WQC Comments

Dear Commissioner Heiple:

The Massachusetts Municipal Wholesale Electric Company (MMWEC), the Commonwealth's designated joint action agency, offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations. Together, the Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

MMWEC has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, local, cost-competitive power from FirstLight's facilities being delivered to homes and businesses across our municipal utility membership. The partnership has allowed us to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

MMWEC applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River and enables the Projects continued role in serving communities across New England that depend on FirstLight's clean electricity generation.

Sincerely,

Ronald C. DeCurzio, CEO

MMWEC



February 6, 2024

Commissioner Bonnie Heiple
 MA Department of Environmental Protection
 100 Cambridge Street, Suite 900
 Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
 FirstLight 401 WQC Comments

Dear Commissioner Heiple:

Merrimac Municipal Light Department (MMLD) offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations. Together, the Projects play a critical role in delivering clean, local, cost-competitive power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

MMLD has counted FirstLight as a valued partner for years through a successful power purchase agreement that has resulted in significant clean, cost-competitive power from FirstLight's facilities being delivered to homes and businesses across our municipality. The partnership has allowed us

to deliver first-class services at affordable prices to our customers while doing right by them by selecting fossil fuel free power sources. In addition, our agreement with FirstLight supports and advances our efforts to meet and exceed the Commonwealth's mandate to obtain 50% of our power from clean sources by 2030 and 100% by 2050.

MMLD applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River and enables the Projects continued role in serving communities across New England that depend on FirstLight's clean electricity generation.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mary Usovicz", with a long, sweeping flourish extending to the right.

Mary Usovicz

General Manager

Merrimac Municipal Light Department



Office of the Town Administrator
 Town of Montague
 One Avenue A
 Turners Falls, MA 01376

Phone (413) 863-3200 ext. 110
 Walterr@montague-ma.gov

February 24, 2025

Elizabeth Stefanik
 MassDEP Bureau of Water Resources
 100 Cambridge Street, Suite 900
 Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071
 Turners Falls Project No. 1889-085
Town of Montague Comments on Firstlight's 401 Draft Water Quality Certificate

Sent electronically via email to dep.hydro@mass.gov

Dear Ms. Stefanik and the MassDEP team,

The Selectboard of the Town of Montague, through its Town Administrator, hereby submits comments related to FirstLight Power's application on the January 24, 2025 draft 401 Water Quality Certification (WQC) for the Turners Falls Hydroelectric Project ("Turners Falls Project") owned by FirstLight MA Hydro LLC and Northfield Mountain Pumped Storage Project ("Northfield Mountain Project") owned by Northfield Mountain LLC.

The Town of Montague is a community of 8,600 located on the eastern banks of the Connecticut River, with over 13 miles of riverfront. Turners Falls is the largest population center in the Town of Montague and is a designated Environmental Justice Area. The Town of Montague has standing with FERC relative to this license proceeding by virtue of a Motion to Intervene submitted on April 1, 2024.

The Town of Montague is a party to the Recreation Settlement Agreement filed with FERC on June 12, 2023. The Town fully supports the recreation provisions in the settlement agreement, but would note that in accordance with Section 2.2 of that agreement, although we were not a party to the Flows and Fish Passage (FFP) Settlement Agreement, the Town has agreed not to oppose any of the terms of the FFP Settlement Agreement.

The Town of Montague would like to amplify the written comments provided by the Franklin Regional Council of Governments as well as the comments offered by the neighboring communities of Gill, Northfield, and Erving. We feel that the draft conditions could go further to address existing impairments in the upper reservoir and to incorporate modern technologies and monitoring techniques as detailed by the Franklin Regional Council of Governments, however the Town of Montague does not oppose the granting of the license.

We appreciate MassDEP's clear commitment to the integrity of the 401 Water Quality Certification process.

Respectfully,

A handwritten signature in blue ink, appearing to read "Walter Ramsey", with a stylized flourish extending from the end.

Walter Ramsey
Montague Town Administrator

CC: Montague Selectboard
Montague Conservation Commission



TOWN OF NORTHFIELD

69 MAIN STREET
NORTHFIELD, MASSACHUSETTS 01360-1017
413.498.2901 x115
www.northfieldma.gov

February 24, 2025

Elizabeth Stefanik
Bureau of Water Resources
Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071
Turners Falls Project No. 1889-085
Comments on Draft of 401 Water Quality Certificate for FirstLight

Sent electronically via email to dep.hydro@mass.gov

Dear Ms. Stefanik and the MassDEP team:

On behalf of the Town of Northfield, as authorized by the Select Board and the Historical Commission, I hereby submit comments on the January 24, 2025 draft 401 Water Quality Certification (WQC) for the Turners Falls Hydroelectric Project (“Turners Falls Project”) owned by FirstLight MA Hydro LLC and Northfield Mountain Pumped Storage Project (“Northfield Mountain Project”) owned by Northfield Mountain LLC. The two facilities are referred to as “Projects” and the owner and operator as “FirstLight.”

The Town of Northfield is unique in that the Connecticut River literally runs through it — it is the **only town in Massachusetts whose residents live on both sides** of the River. This makes it a vital part of the culture, history and economy of the Town for more than 350 years. It serves as a central recreational, tourism and natural resource for the Town’s 2,866 residents and its visitors and has long fostered the life and prosperity of modern and indigenous residents (who have been here for thousands of years).

Because of this, it bears repeating: the importance of the health and state of the River is especially important to us. Our recreational, historical, and economic plans, and especially those that involve farming, depend deeply on the River and the slowing of erosion.

Northfield has been actively involved in the multi-year process of FERC relicensing of the Projects. As part of this process, we rely heavily on and are grateful for working together with our neighbors and the Franklin Regional Council of Governments (FRCOG). As such Northfield echoes and enthusiastically supports comments submitted by the Town of Gill, the Town of Montague, and the FRCOG. We urge MassDEP to incorporate their requests and give serious consideration to their recommendations, especially the following:

- Allow public access to the plans and reports required by the WQC. Similar to the prior public sessions, both online and in person, during which we saw give and take, question and answer, we look forward to MassDEP extending and continuing these efforts by including public participation and public access to plans and reports in WQC protections.
- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): The Erosion Mitigation, Stabilization, and Monitoring Plan in Appendix F of the draft Certificate recognizes decades of effort by the FRCOG and the Connecticut River Streambank Erosion Committee to monitor and mitigate erosion. However, **the Condition must provide for and require local input and oversight** by the FRCOG, Connecticut River Streambank Erosion Committee, and the local Conservation Commissions for the duration of the FERC license.
- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): Given the **decades** of time involved in a FERC license, it is important to note some of the methods that will be proposed and tried over the next 30-50 years will be experimental. It is critical this Condition requires a standard of success for any future stabilization and restoration projects so that local Conservation Commissions can monitor projects against the standard of success **and with the MassDEP**, enforce the Orders of Conditions until success has been achieved.
- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): Limiting FirstLight's responsibility to repairing only 5% of the total linear feet of new bank erosion sites is stunningly unconscionable and is a "slap in the face" to local landowners and farmers. Corporate use of a public natural resource such as the Connecticut River is a privilege. Those who benefit handsomely should have a stronger responsibility to local and regional communities and to the stewardship of a living resource. The MassDEP's choice of 5% is alarmingly low.
- Special Condition 10 (Turners Falls Impoundment Water Level Management): Project-driven fluctuations in the water levels above the dam in the Turners Falls impoundment (a.k.a. "the river") have a direct impact on bank erosion, which is a significant impairment of water quality. MassDEP must include in its Water Quality Certificate operating conditions that will significantly reduce river level fluctuations.
- Special Condition 25 (Erosion Mitigation, Stabilization and Monitoring): MassDEP's proposed 2-mile no-wake-zone is a measure to help address shoreline erosion in that region supposedly caused by boat waves requires clarification as to enforcement and staffing.

- Special Condition 29 (Recreation Management Plan): The Town of Northfield is a party to the Recreation Settlement Agreement filed with FERC on June 12, 2023. As such, the Town fully supports Special Condition 29 of the draft 401 WQC which calls for adoption of the Recreation Management Plan into the 401 Water Quality Certificate.

In addition, as noted in our comments to MassDEP in 2024, the removal and replacement of the closed and decaying Schell Memorial Bridge is a priority for the Town. This shovel-ready multi-modal transportation replacement project is designed to be part of the Commonwealth of Massachusetts Connecticut River Greenway State Park and to have two parks on both sides of the River (with cultural and historical interpretation), one of which is designated in the Recreation Settlement. The other park is already included in the Commonwealth's design for the replacement project. These parks (and a third option designated in the Recreation Settlement to be identified at a future point) are essential to the overall recreational approach taken by the Town.

That approach seeks to connect the many recreational opportunities together, to connect families to the River, and to physically connect East Northfield and West Northfield. The only current physical connection is the Rt. 10 vehicle bridge which means pedestrians are walking and biking in the breakdown lanes of a 55-MPH state highway. With a unique pedestrian bridge over the River and new parks, our approach seeks to drive economic development and spur more family-based tourism in Northfield and surrounding towns, including our neighbors in Vermont and New Hampshire.

In addition, the other key infrastructure priority is the sewer plant and collection system. The Town is actively designing infrastructure improvements to both the sewer plant and its collection system. As MassDEP well knows, like many towns on the River, the Town of Northfield's vital interests are dependent on the health and state of the River and we need the support of MassDEP and others.

Given the above intricacies, including FirstLight's ownership of property along the River, the Town is particularly dependent on the support and cooperation of FERC, FirstLight, and the Commonwealth to accomplish our goals. We ask that any license or certificate specifically include a commitment to cooperate, especially with the Bridge and sewer projects, and a commitment to remove any barriers to our priorities and related projects wherever possible.

Sincerely,



Barbara L. "Bee" Jacque
Select Board member
Chair, Historical Commission



February 24, 2025

Via Electronic Mail

Commissioner Bonnie Heiple
 MA Department of Environmental Protection
 100 Cambridge Street, Suite 900
 Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085 FirstLight 401 WQC Comments

Dear Commissioner Heiple:

The Alliance for Climate Transition ("ACT") appreciates the opportunity to offer this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

ACT leads the just, equitable, and rapid transition to a clean energy future and a diverse climate economy. ACT is the only organization in the Northeast that covers all of the clean energy market segments, representing the business perspectives of investors and clean energy companies across every stage of development. ACT members span the broad spectrum of the clean energy industry, including clean transportation, energy efficiency, wind, solar, energy storage, microgrids, fuel cells, and advanced and "smart" technologies.

ACT is dedicated to growing the clean energy economy in Massachusetts and across the region, in pursuit of our mission to create a world-class and equitable clean energy hub in the Northeast. Our 300+ members include companies based in Massachusetts, doing business, or hoping to make future investments in the state.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection ("MassDEP") represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations. Together, the Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators.

Mid and long-duration energy storage is a critical component of enabling a clean energy transition. Pumped-hydro energy storage like Northfield Mountain is currently the only widely-commercialized source of long-duration energy storage and, [as of 2023, represented](#)

ACT Support Letter_FirstLight 401 WQC_2.24.25

[96% of all utility-scale energy storage in the U.S.](#) As Massachusetts looks to incorporate significant amounts of renewable energy into the grid by 2050, including approximately 24 GW of offshore wind per the [Clean Energy and Climate Plan for 2050](#), there will be an increasing need for utility-scale energy storage and generation assets that can be rapidly deployed to balance the electric grid when the wind isn't blowing and the sun isn't shining. Not only can pumped-hydro resources like Northfield Mountain provide balance, they reduce carbon emissions by displacing more carbon-intensive fossil generators, they can provide relief to ratepayers by generating during times of high demand when prices are highest, known as peak price shaving, and they also reduce reliance on fossil-fuel powered peaker plants during winter months, both offsetting carbon emissions and improving the security of our energy system which is heavily reliant on imported fossil fuels.

As the energy transition advances, we know that intermittent renewables will grow to dominate our grid mix, and electricity demand will likely at least double as systems shift from fossil-powered to electricity-powered. We must double down in support of the existing clean electricity generation and storage assets like FirstLight's Projects that can be called on today and will continue to provide significant value to the region in the transformative decades ahead.

We applaud MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that both supports a healthy Connecticut River, the continued operations of FirstLight's Northfield Mountain and Turners Falls Projects, and, therefore, the Commonwealth's clean energy future.

Sincerely,

/s/ Tim Snyder

Tim Snyder
VP of Public Policy and Government Affairs
Alliance for Climate Transition
tsnyder@joinact.org

Ashuelot River Local Advisory Committee

Washington Lempster Marlow Gilsum Sullivan Surry Keene Swanzey Winchester Hinsdale
Feb. 24, 2025

Elizabeth Stefanik
MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: First Light 401 WQC

Dear Ms. Stefanik:

The Ashuelot River Local Advisory Committee (ARLAC) convened in 1994 with the acceptance of the Ashuelot River into the NH Rivers Management and Protection Program. Appointed by the NH Rivers Management Advisory Committee, ARLAC represents the ten corridor towns of the Ashuelot River and acts in an advisory capacity to the NH Department of Environmental Services. ARLAC has implemented a river monitoring program since 2001 with the assistance of the NH Volunteer River Assessment Program. We have established within the river corridor a management plan that proposes the protection of plentiful clean water, thriving riparian and aquatic habitat for wild plants and animals, and providing balance for continued development of land use and water uses, recreation, and other public needs.

The Ashuelot River flows into the Connecticut River at the upper reach of the Turners Falls Impoundment (TFI). Any impairments to the Connecticut River impact the Ashuelot, especially regarding water quality, aquatic habitat and fish migration. ARLAC has been supportive of the restoration of anadromous fish passage to the Ashuelot River, having supported the removal of three non-functional dams on the river. Planned this year is the removal of Fiske Mill Hydro, restoring aquatic organism passage to 7.44 miles of upstream river and streams of the Ashuelot. We continue to advocate for measures assuring a safe and healthy ecosystem free of obstruction to migrating and local fish populations.

1. The draft Massachusetts DEP 401 Water Quality Certificate (WQC) notes a number of reaches of the Connecticut River above and below Turners Falls Dam (TFD) as currently listed as impaired for various reasons, including dewatering, flow regime modification, and streamside alteration—impairments attributable in whole or in part to the operations of the First Light Projects. The draft WQC does not however show that these portions of the river will move from “impaired” status to “attainment” status under the proposed renewed FERC license.
2. The TFI experiences significant fluctuations in river height due to the Northfield Mountain Pumped Storage facility (NMPS), leading to severe shoreline erosion. This 20-mile stretch of the Connecticut River, suffers from erosion exacerbated by the facility’s operations, which vary the water level by up to five feet. Historical data and studies, including reports by the US Army Corps of Engineers and the Connecticut River Conservancy (CRC) hired expert, Dr. Evan Detheir, confirm that the pumping activities are a significant cause of the erosion. CRC appreciates that the WQC Special Condition # 10 requires First Light to keep the river height between 178.5 and 185 ft. However, this Condition also includes “discretionary events” when the NMPS is allowed to operate to an elevation of 178.5-177.5 ft 30 times per year. These latter elevations not only have proven dangerous for boaters, but

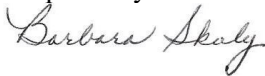
19 Spring St., Swanzey, NH 03446, (603) 352-0987

increases the occurrence of dewatering the streambed as well as the frequency of fluctuations. The discretionary permission effectively eliminates the protection afforded by the parameters established by the draft WQC.

3. The draft WQC proposes minimum flows of 500 cfs from July 1– Nov. 15 in the one mile-bypass reach of river below TFD to Station 1. According to CRC’s expert, 500 cfs will allow for only 10% of maximum available habitat for macroinvertebrates. 500 cfs is inadequate to protect and maintain aquatic life uses (ALU), most notably impacting state and federally listed Shortnose Sturgeon. ARLAC supports the CRC’s position that a minimum flow of at least 1,400 cfs from July 1 through Nov. 15 is needed to protect ALUs as well as recreation, which is currently impaired in that section of the river.
4. ARLAC supports the need for the protection of endangered species, but believes the draft WQC should place the needs of native aquatic species over the Tufted Hairgrass (endangered) and Tradescant’s Aster (threatened). Rather than base its proposed minimum flows on protecting the most sensitive ALUs, the proposed minimum flow of 500cfs is based on two non-aquatic species that would not exist in the mile stretch below TFD except for the years of impairment due to dewatering.
5. The draft WQC proposes installation of a barrier net at Northfield Mountain be achieved by year 5. Research by the CRC indicates this can be accomplished in 1-2 years. ARLAC supports the shorter window with a design accommodating the Shortnose Sturgeon. Also needed are Adaptive Management Measures (AMM) if the net does not perform as expected in protecting ALUs

In conclusion, ARLAC is appreciative of the updated provisions of the draft WQC that will provide for more water in the river during springtime and improve fish passage. However, in the summer the river will receive only about half the amount of water needed for ALUs. The delays in the installation of fish passage infrastructure is discouraging as we attempt to restore aquatic organism passage on the Ashuelot River. Also the duration of the license without provisions for AMMs and the ensuing lengthy process of relicensing adds to an undue delay in our river restoration. We need these fish passage measures to be expedited. Additionally, inclusion of decommissioning plans and financial assurances from First Light for when the facilities are ready for retirement and removal should be part of the water quality certification process. This measure is crucial to prevent further water quality degradation and ensure that taxpayers do not bear the financial burden of decommissioning.

Respectfully submitted,



Barbara Skuly
Chairman

CC: T. Sales, NHRMPP

MassDEP Filing:

02/18/2025

Commissioner Bonnie Heiple
 MA Department of Environmental Protection
 100 Cambridge Street, Suite 900
 Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
 FirstLight 401 WQC Comments

Dear Commissioner Heiple:

Clayton D. Davenport Trucking, Inc. offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has been a valued partner for Massachusetts businesses, with local vendor contracts totaling nearly \$35 million since 2020. In addition, FirstLight enhances Western Massachusetts communities by providing accessible, year-long recreation offerings, as an employer of over 140 people in New England, including many important union and non-union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find, and as a major taxpayer in Gill, Montague, Northfield and Erving.

Clayton D. Davenport Trucking, Inc. applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,



Clayton D. Davenport III

Clayton D. Davenport Trucking, Inc.

FERC Filing:

02/18/2025

The Honorable Debbie-Anne Reese
 Acting Secretary
 Federal Energy Regulatory Commission
 888 First Street N.E.
 Washington, DC 20426

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
 FirstLight 401 WQC Comments

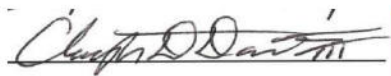
Dear Acting Secretary Reese:

Clayton D. Davenport Trucking, Inc. offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has been a valued partner for Massachusetts businesses, with local vendor contracts totaling nearly \$35 million since 2020. In addition, FirstLight enhances Western Massachusetts communities by providing accessible, year-long recreation offerings, as an employer of over 140 people in New England, including many important union and non-union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find, and as a major taxpayer in Gill, Montague, Northfield and Erving.

Clayton D. Davenport Trucking, Inc. applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,



Clayton D. Davenport III

Owner/Clerk

Clayton D. Davenport Trucking, Inc.



February 24, 2025

DEP-BWR
 Elizabeth Stefanik
 Attn: *FirstLight 401WQ*
 100 Cambridge Street, Suite 900
 Boston, MA 02114
dep.hydro@mass.gov

Re: Comments on Massachusetts Department of Environmental Protection's January 24, 2025 Draft Water Quality Certification with Conditions for FirstLight Hydroelectric Projects, FERC License Nos. 1889 (Turners Falls) and 2485 (Northfield Mountain)

Dear Ms. Stefanik:

The Connecticut River Conservancy ("CRC") thanks you for this opportunity to comment on the Draft Water Quality Certification with Conditions ("Draft WQC") for the FirstLight Hydroelectric Project. However, the Draft WQC does not meet the State Water Quality Standards ("WQS") as we will describe herein. As an environmental organization dedicated to the protection and restoration of the Connecticut River and its tributaries, CRC is deeply concerned about the significant adverse impacts the Turners Falls Dam (FERC No. 1889) ("Turners Falls Dam" or "TFD") and the Northfield Mountain Pumped Storage Project (FERC No. 2485) ("NFM") (collectively, "FirstLight Projects") will have on water quality and aquatic ecosystems. FirstLight's Section 401 Application submitted on April 22, 2024 to the Massachusetts Department of Environmental Protection ("DEP") does not meet the requisite standard for ensuring that the continued presence and operation of the FirstLight Projects will comply with Massachusetts WQS. To compound matters, the Draft WQC that DEP published on January 24, 2025, fails in its duty to require the FirstLight Projects to meet WQS.

Since 1952, CRC has worked to protect and restore the Connecticut River and its tributaries. CRC represents thousands of members across four states, including Massachusetts, and as the only nonprofit organization dedicated to protecting the entire Connecticut River ecosystem, our comments consider not only the localized impacts of the FirstLight Projects, but also the watershed-wide implications of DEP's Draft WQC. To that point, the Vermont and New Hampshire section of the river from above the TFD to the Bellows Falls Dam also is adversely impacted by failure of the Draft WQC to require compliance with WQS.

American Rivers works to protect wild rivers, restore damaged rivers, and conserve clean water for people and nature. Since 1973, American Rivers has protected and restored more than 150,000 miles of rivers through educational and advocacy efforts, on-the-ground projects, and an

annual America's Most Endangered Rivers campaign. Annually American Rivers engages in more than 20 hydropower relicensings across the country. American Rivers has regional programs across the country including the Northeast, and more than 100,000 supporters, members, and volunteers nationwide. American Rivers' staff and volunteers work to enhance river flows and increase river connectivity to benefit biodiversity, protect floodplains and wetlands, and restore rivers providing climate change refugia. Members of American Rivers enjoy and are sustained by the resources of the Connecticut River including for angling, boating, swimming, hiking, and wildlife viewing.

CRC stands with the Franklin Regional Council of Governments ("FRCOG") and the local political delegation of Jo Comerford, Natalie Blais, and Mindy Domb, fully supporting comments submitted by these two groups.

CRC appreciates DEP's decision, at CRC's request, to provide a comment period before the Draft WQC was written, to hold a public information session in-person in the Project area, and to extend the Draft WQC comment period from 21 days to 30 days. CRC looks forward to continuing to work with DEP during the remainder of the 401 process to ensure the protection and restoration of the Connecticut River for the next half century and beyond.

I. Introduction

The Connecticut River flows through the heart of Massachusetts. It is a crucial corridor for migratory and other fish and for their habitat. It has long captured the attention of human inhabitants of the area and remains a site of historic and cultural significance. People have been and are drawn to its waters and particularly to the river's aquatic life: "*The perch, the dace in silvered pride; The princely salmon, sturgeon brave, And lamprey, emblem of the knave.*"¹ Perhaps as a result, it is one of the few resources Massachusetts regulations explicitly lists as a public trust resource.² However, by the twentieth century, the river had been pervasively dammed and, as result, water quality throughout the watershed is impaired.³ The stretch of river in the Project area is no exception. Dewatering and stream flow modification impair these segments.⁴ Indeed, the lengthy and largely dewatered so-called Bypassed Reach below TFD is emblematic of the deleterious effect that dams can have on rivers.

Luckily, while it is ailing, the river can still recover. And the Clean Water Act requires that it does.

This FERC relicensing comes at a precarious, but also opportune, moment. Through its water quality certification, Massachusetts has an obligation to ensure that the FirstLight Projects meet state water quality standards. As such, this water quality certification represents an outstanding opportunity to safeguard the health of the river for future generations by addressing lessons learned over the term of the previous license and by incorporating newly discovered information. For instance, relicensing at this time will also allow DEP to fully incorporate the now-known presence of endangered shortnose sturgeon in the Turners Falls Impoundment ("TFI") and to better protect intrepid sturgeon following their ancient migratory impulses up to the base of TFD. Relicensing can also address climate change that is already impacting the Project area, and which will only increase in pace and intensity within the term of the upcoming license.

CRC acknowledges and uplifts that DEP added a number of requirements to the WQC that will help enhance water quality. CRC supports: the required reports on impoundment fluctuations and that this information will be made public (for the first time); The Riparian Management Plan An Invasive Species Management Plan; A Sediment Management Plan for times when they need to dredge the upper reservoir at NFM; the full incorporation of the Recreation Management Plan that was a part of the Recreation Settlement Agreement; and although not complete, the Riverbank Erosion Monitoring, and Riverbank Repair of previously stabilize sites and new sites that develop.

As it considers whether to grant and, if so, how to condition its water quality certification for the Project, DEP should recognize the long-term impact of its decision. Done poorly and without adequate foresight, there is the risk that the river's health will continue to be compromised until

¹ Josias Lydon Arnold, "Ode to Connecticut River," (1797) available at <https://allpoetry.com/Ode-To-Connecticut-River>.

² 310 CMR § 9.04(1)(b).

³ *Draft Water Quality Certification with Conditions*, FirstLight Hydroelectric Project (P-1889, P-2485) (Jan. 24, 2025) at 7 (hereinafter "Draft WQC")

⁴ Draft WQC at 7.

well into the 21st century. Done well, DEP has a generational opportunity to protect, restore, and enhance the health of the Connecticut River for the next 30 to 50 years, and beyond.

II. Legal Background

Pursuant to Section 401 of the Clean Water Act, 33 U.S.C. § 1341, any applicant for a federal license or permit to conduct an activity which may result in a discharge to navigable water must first obtain certification that the activity complies with applicable state water quality standards. Specifically:

[A]n applicant for a federal license or permit to conduct any activity which may result in any discharge into the navigable waters [is required] to obtain from the State a certification that any such discharge will comply with the applicable provisions of sections [1311, 1312, 1313, 1316, and 1317 of this title]. Section 401(d) further provides that any certification . . . shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant . . . will comply with any applicable effluent limitations and other limitations, under section [1311 or 1312 of this title] . . . and with any other appropriate requirement of State law set forth in such certification.

PUD No. 1 of Jefferson Cnty v. Wash. Dep't of Ecology, 511 U.S. 700, 707-708 (1994) (internal citations and quotations omitted). In this case, DEP may only issue such certification if it finds that FirstLight has “demonstrated compliance” with applicable WQS. And DEP’s certification must set forth any limitations, in the form of conditions, and monitoring requirements necessary to ensure such compliance for the life of the federal license.

Massachusetts state law imposes on DEP “the duty and responsibility” to “*enhance* the quality and value of water resources” of the Commonwealth.⁵ As part of this obligation, DEP must “[t]ake all action necessary or appropriate to secure to the commonwealth the benefits of the Federal [Clean Water Act].”⁶ The Clean Water Act, in turn, has as its objective “to *restore* and maintain the chemical, physical, and biological integrity of the Nation’s waters.”⁷ Thus, improvements from a severely degraded or highly impaired state, while positive, are not sufficient—restoration and enhancement are the standards DEP must meet.

Further, the Clean Water Act prioritizes “the protection and propagation of fish, shellfish, and wildlife and provid[ing] for recreation in and on the water” as interim national water quality goals to meet its objective.⁸ To meet its obligations under state law and the Clean Water Act, DEP:

has adopted the Massachusetts Surface Water Quality Standards which designate the most sensitive uses for which the various waters of the Commonwealth shall be enhanced, maintained and protected; which prescribe the minimum water

⁵ M.G.L. Ch. 21 § 27 (emphasis added); 314 CMR 4.01(3).

⁶ M.G.L. Ch. 21 § 27(3); 314 CMR 4.01(3).

⁷ 33 U.S.C. § 1251(a) (emphasis added); 314 CMR 4.01(3).

⁸ 33 U.S.C. § 1251(a)(2).

quality criteria required to sustain the designated uses; and which contain regulations necessary to achieve the designated uses and maintain existing water quality including, where appropriate, the prohibition of discharges.⁹

Specifically with regard to Section 401 certifications for FERC licenses, “*flows* shall be maintained or restored to protect existing and designated uses.”¹⁰ “Designated uses” are defined as “[t]hose uses specified in 314 CMR 4.05 and 314 CMR 4.06 for each water Class whether or not they are being attained.”¹¹ The regulations define “existing uses” as “[t]hose designated uses and any other uses *that do not impair the designated uses* that are actually attained in a waterbody on or after November 28, 1975.”¹² Thus, if the attainment of an existing use impairs a designated use, then that use does not qualify as an existing use. Accordingly, pursuant to the regulations, if there is a conflict between a designated use and an existing use, attainment of the designated use is prioritized.

Water quality standards also must include a statewide antidegradation policy, which in Massachusetts is set forth in 314 CMR 4.04, and provides that “[i]n all cases existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”¹³

The FirstLight Projects will directly impact a several mile stretch of the Connecticut River, from the Vernon Dam in Vermont and New Hampshire¹⁴ to well downstream of the Turners Falls Dam in Massachusetts. This stretch of the Connecticut River is comprised of multiple river segments subject to a number of WQS including sensitive designated and existing uses, narrative water quality criteria, numerical water quality criteria, and the state’s antidegradation policy.¹⁵ The river segments above and below the Turners Falls Dam are classified as Class B waters.¹⁶ Class B waters “are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation.”¹⁷

Hydroelectric facilities and the impoundments they create have contributed to impairment of Massachusetts waterways for at least a century.¹⁸ The three river segments spanning the Project area—from the state line to Route 10 (MA34-01); from Route 10 to Turners Falls (MA34-02); and from Turners Falls Dam to Gill/Montague (MA34-03)—are listed as impaired on Massachusetts’s 303(d) list meaning that those river segments are not meeting water quality standards. Among other causes of impairment, flow regime modification impairs all three

⁹ 314 CMR 4.01(3).

¹⁰ 314 CMR 4.03(3)(b) (emphasis added).

¹¹ 314 CMR 4.02.

¹² 314 CMR 4.02 (emphasis added).

¹³ 314 CMR 4.04(1).

¹⁴ Due to the water quality impacts upstream of the FirstLight Projects in Vermont and New Hampshire the Clean Water Act’s “Neighboring Jurisdictions” regulation is implicated. 33 U.S.C. § 1341(a)(2); 40 C.F.R. § 121, Subpart B.

¹⁵ 314 CMR 4.05(3)(b), 4.05(5); 4.04, 4.06 Table 7.

¹⁶ 314 CMR 4.06, Table 7.

¹⁷ 314 CMR 4.05(3)(b).

¹⁸ Draft WQC at 7.

segments. Additionally, for MA34-03, which is the segment immediately below Turners Falls Dam, dewatering is a cause of impairment. For each of these impairments, impacts from the FirstLight Projects are the source of impairment.¹⁹

III. DEP's Draft WQC Does Not Comply With Water Quality Standards

DEP did not participate in the FERC settlement negotiations because it claimed it would do its own independent analysis once it received FirstLight's 401 application. However, the Draft WQC does not bear the hallmarks of an independent evaluation; rather, it adopts the proposed settlement almost in its entirety, despite robust comments and evidence provided by a variety of stakeholders, including CRC, river-adjacent municipalities, and private landowners. This lack of independent judgment is particularly manifest in DEP's conclusions regarding flows below TFD from July 1 through November 15. In addition to inadequate flows below TFD, the Draft WQC does not impose sufficient conditions to address water quality impairments related to erosion in the TFI, impacts to endangered shortnose sturgeon, impacts to migratory fish, the reasonably foreseeable impacts of climate change, and financial assurances for decommissioning and removal of the FirstLight Projects at the end of their useful life.

A. The Draft WQC Does Not Meet DEP's Burden to Justify 500 cfs Flows Will Protect, Restore and Enhance Aquatic Life Uses in the One-Mile Stretch of the Connecticut River Below Turners Falls Dam

The flows proposed first in Firstlight's 401 Certification Application and affirmed in DEP's Draft WQC are inadequate to support aquatic life uses ("ALUs") and recreation in the section of the river that is known as the Bypassed Reach, from TFD to Cabot Station. Specifically, in the one-mile section of the Bypassed Reach from TFD to Station One, the low flows notably impact state and federally listed endangered shortnose sturgeon, but also a wide range of invertebrates and other aquatic species, including a fish designated by Massachusetts as a species of special concern. While state endangered and threatened plant species, Tufted Hairgrass (*Deschampsia cespitosa ssp. glauca*) and Tradescant's Aster (*Symphotrichum tradescantia*), are present along the shoreline below the dam, they only exist there due to the dam's long-term dewatering of that stretch of the river. The incongruity of DEP's reliance on the plants to meet its obligations to ensure "flows shall be maintained or restored to protect existing and designated uses" while ignoring the adverse impact of low flows on aquatic organisms is inescapable. Here, flows are not being "maintained or restored" to protect the plants; they are being kept artificially lower. It cannot be that a discharge can impair the use of a river segment to such a degree that a new species appears there, and that new species becomes a reason to continue the impairment and stall recovery for decades. Simply put, this makes no sense. DEP has a duty under the Clean Water Act and State Water Quality Standards to consider and weigh other ALUs, such as sturgeon, other aquatic life, recreation, and aesthetic values in the process of ensuring that FirstLight is in compliance with the law.

CRC has consistently requested that DEP undertake a more comprehensive analysis of the level of flows necessary to enhance and protect aquatic life uses rather than simply relying on the proposed settlement agreement arising out of the FERC process that is based solely on protecting

¹⁹ Draft WQC at 7.

the plant species. DEP must examine the entire “community of aquatic flora and fauna” to determine proper flow levels to be protective of and enhance that community.²⁰ This is imperative in this case because DEP is using non-aquatic species to set flow levels that impact aquatic life uses. This contradicts the scientific and policy reasons underpinning the regulatory requirement to protect “the most sensitive use” in a particular river segment; the policy being that protecting the most sensitive use will provide the broadest and most robust protections for all other aquatic life in that river segment. Here, by choosing to protect the plants over all other aquatic life species, DEP’s decision runs counter to the most sensitive use policy embodied in the Clean Water Act and state water quality standards. Moreover, DEP’s conclusion to set flow levels below the dam based on what would be protective of the plant species is based on a faulty scientific premise—that the plants are aquatic—and even if the premise were correct, DEP has not rebutted the substantial record evidence that higher flows would enhance and be more beneficial for the aquatic life community as a whole, even if the plants were to be harmed.

1. DEP Has Not Established the Plants Are Aquatic

CRC has long questioned DEP’s and FirstLight’s assumption that the plants on which DEP is basing its flow levels are aquatic life.²¹ This fundamental premise underlies DEP’s assumption that they should be protected as an ALU in the same way as fish or benthic macroinvertebrate species. Given CRC’s and other stakeholders’ significant and legitimate concerns about this issue, CRC expected DEP would have provide a detailed analysis supporting its position in the Draft WQC. Instead, DEP offered this conclusory statement: “The plant species present below Turners Falls Dam, are unquestionably classified as aquatic/wetland species and included in the definition of Aquatic Life Use.”²²

Usually, definitive statements like that are accompanied by citations to authority. Here, however, there is no footnote and no authority. Who “classified” them? Where are the “classified” as such? The only inference that the public can draw from such conspicuous absence of authority is that DEP has none to support its conclusion. If DEP has authority to support its conclusion on this controversial and critical issue, by not citing it in the Draft WQC, it is depriving the public from making informed comments on the agency’s analysis.²³

DEP also does not explain whether the plants are aquatic or wetland species or both. It makes a difference and DEP’s use of “aquatic/wetland” is telling. DEP seems to be trying to hedge its bets, but such ambiguity is not sufficient for a determination that will set flow levels below TFD for the next 30–50 years. The law demands—and the public deserves—to know the scientific foundation on which rests DEP’s seemingly arbitrary position.

Not only did DEP fail to cite to authority for its conclusion about the plants, it also failed to grapple with or rebut the contrary scientific evidence CRC provided in prior comments and

²⁰ 314 CMR 4.02 (definition of aquatic life) (emphasis added).

²¹ See, e.g., CRC’s June 13, 2022 Letter to Secretary Card; CRC’s June 3, 2024 Comments on FirstLight’s WQC Application (hereinafter CRC’s June 3, 2024 Comments”), at 12–13.

²² Draft WQC at 23.

²³ This is also a departure from DEP’s practice of citing authority to support its positions, as it does in other sections of the Draft WQC.

letters. Both sensitive plant species are classified as “facultative wetland species,” meaning that they usually occur in wetlands, but may occur in non-wetlands. While there is no national system which categorizes aquatic plants, there is a large body of scientific literature which distinguishes aquatic plants from non-aquatic plants. In his classic treatise on aquatic plants, Sculthorpe states that aquatic plants “live and reproduce in partly or wholly submerged state.”²⁴ More recent researchers have defined aquatic plants as “... photosynthetic organisms ... that actively grow permanently or periodically submerged below, floating on, or growing up through the water surface,”²⁵ or plants “whose life cycle takes place completely or periodically in the aquatic environment.”²⁶ Further, the Environmental Protection Agency’s (“EPA”) definition of aquatic plant does not fit either species: “[p]lants that grow in water either floating on the surface, growing up from the bottom of the body of water or growing under the surface of the water.”²⁷ Likewise, MassWildlife’s descriptions of the plants do not identify them as aquatic; the word aquatic does not appear on MassWildlife’s summary descriptions of either species.²⁸ To the extent that DEP is relying on MassWildlife to graft the word “aquatic” onto these two species, MassWildlife does not use that descriptor and DEP has not identified any other source for this characteristic. Finally, a botanical inventory of aquatic plant species was conducted of this stretch of the Connecticut River by Hickler et al. This survey documented all of the “truly aquatic taxa, which rarely stray beyond the permanently flooded reaches of the river.”²⁹ Neither Tradescant’s Aster nor Tufted Hairgrass are included in that list. While their presence is well known to local botanists, their omission from Hickler’s list is strong evidence that they are not considered aquatic flora.

In order to survive in aquatic environments, there are a wide range of adaptive mechanisms that aquatic plants have evolved, including specialized tissues for internal gas exchange to survive in anoxic environments, reduced or absent cuticles to facilitate gas and nutrient exchange, and adaptive morphology such as highly dissected leaves.³⁰ Neither Tradescant’s Aster nor Tufted Hairgrass are known to survive in truly aquatic environments. A review of the herbarium records of each of these species in Massachusetts fails to find any occurrences documented in aquatic environments. In addition, neither of these species is known to possess any specific adaptive features that indicate they have evolved to survive in an aquatic environment.³¹ DEP

²⁴ Affidavit of Michael Lew-Smith, ¶ 5 (citing Sculthorpe, C.D. 1967. *The Biology of Aquatic Vascular Plants*. 2nd ed. London: Edward Arnold Publishers Ltd. , attached as Exhibit A (hereinafter “Lew-Smith Affidavit”).

²⁵ Lew-Smith Affidavit, ¶ 5 (citing Chambers, P. A., P. Lacoul, K. J. Murphy, and S. M. Thomaz. 2007. “Global Diversity of Aquatic Macrophytes in Freshwater.” *Freshwater Animal Diversity Assessment*, April, 9–26. https://doi.org/10.1007/978-1-4020-8259-7_2).

²⁶ Lew-Smith Affidavit, ¶ 5 (citing Lesiv, M S, A I Polishchuk, and H L Antonyak. 2020. “AQUATIC MACROPHYTES: ECOLOGICAL FEATURES AND FUNCTIONS.” <https://doi.org/10.30970/sbi.1402.619>).

²⁷ Aquatic Biodiversity Glossary, U.S. Env’t Prot. Agency, Office of Mission Support, (last updated Dec. 8, 2010) available at:

https://ofmpub.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&glossaryName=Aquatic%20Biodiversity%20Glossary#:~:text=Definition:%20A%20beneficial%20use%20design,component%20of%20a%20biological%20system.

²⁸ See <https://www.mass.gov/doc/tradescants-aster/download>; <https://www.mass.gov/doc/tradescants-aster/download>.

²⁹ Lew-Smith Affidavit, ¶ 12 (citing Hickler, Matthew G., Robert I. Bertin, Glenn Motzkin, and Karen B. Searcy. 2018. “Notable Aquatic Plants from the Connecticut River in Franklin County, Massachusetts.” *Rhodora* 120 (981): 76–86. <https://doi.org/10.3119/17-14>).

³⁰ Lew-Smith Affidavit, ¶ 6.

³¹ Lew-Smith Affidavit, ¶ 9.

concedes this in the Draft WQC, stating the “vertical lower extent of habitat is limited by persistent inundation,”³² but as noted above being able to survive persistent inundation is what defines an “aquatic” plant. Accordingly, DEP’s continued insistence that the two plant species are “unquestionably” aquatic is not supported by record evidence before DEP and therefore it is arbitrary and capricious to use the plants to set flows to protect and restore “aquatic life uses.”

2. DEP Has Not Met Its Burden To Show the Plants are Existing Uses

If the plants are not designated aquatic life uses, they still might be protected as existing uses. DEP’s argument for prioritizing the protection of the plants over all other aquatic species hinges in part on its characterization of the plants as an “existing use” under the antidegradation provisions of the state WQS.³³ However, DEP omits a key component of the definition of “existing use” in Massachusetts WQS in the Draft WQC, stating “[e]xisting [u]ses are defined as the designated uses and any other uses actually attained in a water body on or after November 28, 1975.”³⁴ The full text of Massachusetts WQS in fact reads: “[t]hose designated uses and any other uses *that do not impair the designated uses* that are actually attained in a waterbody on or after November 28, 1975.”³⁵

By omitting this key language, DEP obscures the possibility that an existing use that impairs a designated use would not be properly considered an existing use, and therefore the antidegradation policy would not apply. Here, designated ALUs will be impaired if the plants are prioritized when establishing flows below TFD. As asserted previously, lower flows will decrease habitat availability for all other aquatic species in the river, including sturgeon, state fish species of special concern, and macroinvertebrates, impairing these other uses.³⁶ DEP’s reliance on the plants as “existing uses” is misplaced and unsupported.

3. DEP Has Not Analyzed the Possibility of Transplanting the Plants

Transplanting the plants is another option that DEP should have considered and analyzed, but the Draft WQC does not contemplate that option and certainly does not rule it out. The Massachusetts Endangered Species Act (“MESA”)³⁷ itself contemplates the relocation of species where necessary: “The director may permit the taking, possession, purchase, sale, transportation, exportation or shipment of any species appearing on the list of endangered or threatened species or species of special concern developed by the director pursuant to section four for scientific, conservation, management or educational purposes.”³⁸ Transplanting is a tool that should be evaluated to alleviate the conflict between protecting the plants and protecting ALUs. However,

³² Draft WQC at 21.

³³ Draft WQC at 23.

³⁴ Draft WQC at 22.

³⁵ 314 CMR § 4.02 (emphasis added).

³⁶ See Donald Pugh, Affidavit on Behalf of the Connecticut River Conservancy (hereinafter “Pugh Affidavit”), in Comments of Connecticut River Conservancy in Opposition to certain conditions from the March 31, 2023 Offer of Partial Settlement for the Turners Falls Hydroelectric Project et al. under P-1889 et al., FERC Accession No. 20230525-5090 (filed May 25, 2023), at ¶ 1, 5-7.

³⁷ M.G.L. Ch. 131A.

³⁸ M.G.L. Ch. 131A § 3; 321 CMR 10.04(3)(a)-(c).

DEP, despite urging from CRC and other stakeholders, failed to evaluate this option, despite possessing clear statutory authority under MESA to do so.

Transplanting has been used in analogous situations to alleviate similar conflicts in the past. The Tubercled Orchid (*Plantanthera flava*) was transplanted out of portions of the Deerfield River during the Deerfield River, Gardners falls, and Bear Swamp Pumped Storage Project's relicensing in the 1990s.³⁹ The Deerfield River relicensing was an analogous situation to ours, because the orchid, a threatened species in Vermont, had established itself in areas that had been bypassed and thus de-watered. The solution in the case of the orchid at the Deerfield River Project was to develop a "Tubercled Orchid Mitigation and Monitoring Plan" incorporated as part of the license, which contained provisions for relocating and maintaining populations affected by the increased flows, monitoring relocations, mapping, and follow up to check on the species after the fact.⁴⁰ The transplant was so successful that the Vermont Nongame and Natural Heritage Program wrote a letter to Great River Hydro, specifically thanking it for its efforts in protecting the Orchid.⁴¹ This example shows that transplanting endangered plant species in order to accommodate higher flow levels to protect ALUs is a viable option. DEP has an obligation to fully evaluate this possibility and explain its reasoning for rejecting it so the public can provide meaningful input on that decision.

As it stands now, CRC and the public do not know whether DEP considered the option at all, or if it did, why the agency rejected it. Given this option was successfully employed in a previous analogous situation, and was specifically raised in comments by CRC and others, DEP's failure to consider and analyze this possibility is arbitrary and capricious and a failure to explore a feasible option that would protect, restore and enhance a greater extent of the aquatic community.

4. DEP Arbitrarily Ignores Evidence of State Listed Fish Species in the Bypassed Reach

DEP claims in the Draft WQC that "there is no evidence to support a conclusion that habitat for the two rare fish species . . . , the Burbot (*Lota lota*) and the Longnose Sucker (*Catostomus catostomus*) , is an existing use."⁴² To support this contention, DEP further states "these species are not currently present, nor would they return to the area if flows were increased."⁴³ DEP's claims are both legally and factually incorrect. First, CRC provided DEP with a scientific reference of a 12-inch burbot caught in a pool below TFD in 2000. The angler who caught the burbot reported that other burbot specimens had been caught. This establishes the presence of

³⁹ Susan Taft, *Hydropower Project Summary: Deerfield River, VT and MA*, Hydropower Reform Coalition and River Management Society at 8 (September 1, 2020), available at https://www.river-management.org/assets/Hydro/2020/Deerfield%20River_P-2323_11-16-20.pdf.

⁴⁰ Tubercled Orchid Mitigation and Monitoring Plan, Deerfield River Project, FERC No. 2323 (May 1997); Final Environmental Impact Statement, Deerfield River Projects, (August 1996), available at https://lowimpacthydro.org/wp-content/uploads/2021/02/FERC_Final_EIS_1996.pdf.

⁴¹ LIHI Recertification Application, Deerfield Hydroelectric Project, LIHI Certification # 90, at 45 (November 2020), available at <https://lowimpacthydro.org/wp-content/uploads/2020/11/PUBLIC-Deerfield-Final-revised-application-signed.pdf>.

⁴² Draft WQC at 24.

⁴³ Draft WQC at 24.

burbot in the bypass reach after 1975, which makes it an existing use under the Clean Water Act. DEP's claim that burbot "are not currently present" in that stretch of the Connecticut River is irrelevant to whether burbot is an existing use. And DEP's conclusion that burbot would not "return to the area if flows were increased" is an admission by DEP that burbot were once there (which is consistent with the evidence from Hartel, et al. (2002)), and thus are an existing use, but DEP's conclusion that they would not return with higher flows is not supported by any authority or analysis.

5. DEP's Purported Balancing And Compromise Does Not Protect the Aquatic Community Of The River Below Turners Falls Dam

DEP claims that for flows below TFD, MassWildlife "sought the compromise of 500 cfs" to protect the plant species.⁴⁴ DEP apparently accepted this "compromise" because that is the flow level in the Draft WQC. There are at least two problems with this. First, MassWildlife's mission, and in particular the Natural Heritage and Endangered Species Program's ("NHESP") mission, is different from DEP's. NHESP is responsible for protecting the state's wide range of native biological diversity, including species listed as endangered or threatened under MESA. Thus, it is understandable why MassWildlife would seek a compromise to protect the plants. DEP's mission, however, in the context of WQC, is to ensure the FirstLights Projects comply with WQS. That obligation requires DEP to recover and enhance aquatic life uses and to elevate the water quality of this segment of the river to non-impaired status. There is no authority in the Clean Water Act or Massachusetts WQS for balancing recovery of aquatic life uses with protection of non-aquatic species.⁴⁵

Second, MassWildlife's "compromise," as demonstrated in the table below, is weighted far too heavily in favor of the non-aquatic plants. Even accepting DEP's percentages as true—which CRC does not concede—the proposed 500 cfs flows are not fully recovering habitat for a multitude of ALUs, much less enhancing that habitat. The percentage increases in the Weighted Usable Area ("WUA") that DEP touts look more significant than they are because they are percentage increases from a historically dewatered and impaired section of the river. Further, other designated uses such as recreation and aesthetic values remain impaired in order to accommodate the plants.

⁴⁴ Draft WQC at 20.

⁴⁵ Even FirstLight in its Section 401 Application acknowledged the balancing taking place: "the 500 cfs minimum flow represents an equivalent flow agreed upon by the [U.S. Fish & Wildlife Service], [National Marine Fisheries Service], and [Massachusetts Division of Fisheries & Wildlife] reflecting the balancing of aquatic resources and rare plants." FirstLight 401 Certificate Application, at Att. C-8 (emphasis added).

Non-Aquatic Plants Currently Being Used to Set Flows Below Turners Falls Dam	Aquatic Life Uses That Would Be Protected, Recovered and Enhanced by Additional Flows Below Turners Falls Dam
<p>Tufted Hairgrass (<i>Deschampsia cespitosa</i> ssp. <i>glauca</i>): state endangered facultative wetland plant</p> <p>Tradescant's Aster (<i>Symphyotrichum tradescantia</i>): state threatened facultative wetland plant (also occurs in relatively equal numbers within the impoundment of the Holyoke Dam)</p>	<p>Migratory fish: DEP claims “in some areas⁴⁶ [proposed] flows will provide” the following:</p> <p><u>For spawning sea lamprey:</u> an average of 84 percent of maximum WUA, which means additional flows could provide up to an additional 16% WUA</p> <p><u>For spawning shad:</u> 73 percent of maximum WUA, which means additional flows could provide up to an additional 27% WUA</p> <p><u>For juvenile shad:</u> 88 percent of maximum WUA, which means additional flows could provide up to an additional 12% WUA</p> <p><u>For spawning state and federally endangered sturgeon:</u> 96% of maximum WUA, which means additional flows could provide up to an additional 4% WUA</p> <p><u>For state and federally endangered sturgeon fry:</u> 73% of maximum WUA, which means additional flows could provide up to an additional 27% WUA</p>
	<p>Resident Riverine Fish: DEP claims the proposed flows provide “from 53 to 81 percent of maximum WUA for resident riverine fish species from summer through early spring,” which means additional flows could provide up to an additional 47 to 19% WUA during that same time period</p>

⁴⁶ DEP does not define what it means by “in some areas” which begs the question of what areas will these percentages apply to and what are the percentages of maximum WUA in “other” areas.

	Burbot: Massachusetts species of special concern that is an existing use in the Bypass Reach
	Macroinvertebrates: Despite having evidence before it related to the beneficial effects of additional flows on macroinvertebrates, DEP provides no analysis in its Draft 401 Certification for this Aquatic Life Use. ⁴⁷
	Recreation: Additional flows would recover and enhance boating in the Bypass Reach, which was barely navigable at 545 cfs. ⁴⁸
	Aesthetics: Additional flows would recover and enhance the aesthetic value of the Bypass Reach, consistent with the requirement under WQS that Class B waters “have consistently good aesthetic value.” ⁴⁹

6. DEP To Consider Protection Of Cultural Resources In Choosing Higher Flows

CRC stands in alignment with The Nolumbeka Project and the local Indigenous tribes of the area. Maintaining higher river flows would protect culturally important sites on Rawson Island and Peskeomskut Island by impeding public foot access that may otherwise cause damage to cultural artifacts. CRC stresses the importance of considering Indigenous perspectives in the WQC process, which previously have been overlooked by regulatory agencies and are still largely being dismissed by FirstLight. The higher flows will not only mean that WQS are being met, but also that cultural resources are being protected and respected.

B. DEP Has Not Met Its Burden To Show Shortnose Sturgeon Will Be Adequately Protected

There is perhaps no more sensitive truly aquatic species present in the stretches of the Connecticut River, both above and below Turners Falls Dam, than the shortnose sturgeon. Listed as endangered both under the federal Endangered Species Act and under Massachusetts Endangered Species Act, shortnose sturgeon face a host of adverse impacts from the relicensing of the FirstLight Projects. Shortnose sturgeon are both an existing and designated ALU for the portions of the Connecticut River affected by the Project. Given their endangered status, they are

⁴⁷ See generally Pugh Affidavit.

⁴⁸ CRC’s June 3, 2024 Comments, at 15-16.

⁴⁹ CRC’s June 3, 2024 Comments, at 17-19.

unquestionably the most sensitive ALU. Thus, in order to issue a WQC for the Project, DEP must demonstrate that shortnose sturgeon and its habitat will be “enhanced, maintained and protected” in compliance with WQS.⁵⁰ In the 2019 Biological Opinion done for the Holyoke Dam relicensing, the National Marine Fisheries Service (“NMFS”) noted that while the Connecticut River shortnose sturgeon population “has remained relatively stable for the past 30 years, it has shown no sign of recovery.”⁵¹ Further, NMFS noted “the Connecticut River, although capable of supporting a much larger population of shortnose sturgeon (1000s-10,000), continues to accommodate a very small population for the amount of habitat currently available, as compared to shortnose sturgeon populations in other river systems.”⁵² At a minimum, “enhancement” of shortnose sturgeon and its habitat must include meaningful progress toward recovery.

DEP has not met its burden to show shortnose sturgeon will be adequately protected or that its habitat will be enhanced or maintained. To the contrary, DEP has failed to meaningfully address new evidence of sturgeon strandings below TFD and of the presence of sturgeon in the TFI. It continues to rely on resource agencies’ analyses that did not account for the new evidence and claims that mitigation equipment that has not yet been designed will be protective of shortnose sturgeon.

In a December 5, 2024 letter to DEP (“Sturgeon Letter”), CRC outlined new evidence regarding shortnose sturgeon that had not previously been addressed by the proposed settlement agreement in the FERC proceeding or by FirstLight’s related draft Biological Assessment. While DEP acknowledges the new evidence in its Draft WQC, it does not meaningfully consider it or explain why the new evidence does not require a reevaluation of the proposed settlement conditions both below and above Turners Falls Dam.

1. DEP Does Not Adequately Address Recent Sturgeon Strandings And Their Implications For Compliance With Water Quality Standards

In its Draft WQC, DEP briefly references one shortnose sturgeon stranding that occurred in July 2024.⁵³ There are multiple problems with DEP’s characterization. First, DEP only discusses one stranding event when in fact there were two, very close together in time, as CRC informed DEP in its Sturgeon Letter.⁵⁴ Second, DEP appears to question whether it was a sturgeon or not, referring to “a recent sighting *of what was believed to be* a shortnose sturgeon stranded in a pool,”⁵⁵ even though the fish was rescued and released downstream and confirmed by a United States Geological Survey fisheries biologist to be a shortnose sturgeon.⁵⁶ Third, as CRC detailed in its Sturgeon Letter, these strandings were not a first, as the FirstLight spokesperson noted in the press that incidents like these happen “infrequently,” indicating FirstLight is aware of

⁵⁰ 314 CMR 4.01(3).

⁵¹ NMFS, Endangered Species Act Section 7 Consultation Biological Opinion, Continued operation of the Holyoke Hydroelectric Project (FERC #2004), at 122 (Dec. 4, 2019) (hereinafter “Holyoke BiOp”).

⁵² Holyoke BiOp at 122–23.

⁵³ Draft WQC at 34.

⁵⁴ CRC December 5, 2024 Letter to MassDEP at 2 (hereinafter “CRC Sturgeon Letter”).

⁵⁵ Draft WQC at 34 (emphasis added).

⁵⁶ Chris Larabee, *Endangered shortnose sturgeon found near Turners Falls dam*, GREENFIELD RECORDER, <https://www.recorder.com/Endangered-shortnose-sturgeon-found-near-Turners-Falls-dam-56269496>.

previous sturgeon strandings.⁵⁷ Indeed, as far back as 1993, when sturgeon were first caught and seen in the pools below the Turners Falls Dam, NMFS has expressed concern about potential strandings and isolation of sturgeon “as a result of changes in flow releases at the dam.”⁵⁸ It is troubling, given all of this evidence before it, that DEP minimizes the stranding as a “one-off” event.

Finally, DEP engages in a highly convoluted explanation of why the sturgeon were stranded there that does not address the relevant question of how this sensitive designated ALU will be protected and enhanced under the proposed flow conditions. Specifically, DEP acknowledges that it received comments that flows should be increased to address the sturgeon stranding problem below the dam, but apparently concludes this is unnecessary after MassWildlife opined:

that fish strandings in isolated pools below the dam occur from natural or unnatural high flow events where fish swim upstream and then as flows decrease, whether naturally or unnaturally, they are stranded in isolated pools until the next high flow event⁵⁹

Rather than rebut the idea that increased flows are needed, DEP’s description supports the need for increased flows to mitigate sturgeon strandings. While CRC does not know what DEP and MassWildlife are referring to by “natural” flows—none of the flows on this stretch of the river are natural and they are all controlled by FirstLight, so they are unnatural by definition and the direct cause of the strandings—the fact that sturgeon are stranded “until the next high flow event” implies that FirstLight does not control when the next “high flow event” will occur. It also indicates that increased flows would mitigate the strandings, flows which DEP can mandate as part of the WQC. DEP’s failure to reach this logical conclusion based on its own characterization is inexplicable.

Noted sturgeon expert, Boyd Kynard concludes that the currently proposed flows below TFD “could result in strandings that can injure or, potentially kill, sturgeon” and sturgeon would be aided by enough water being released to create more escape routes so they are not stranded in isolated pools.⁶⁰

DEP states that NMFS is “reevaluating the proposed fish passage protections required in relicensing” in light of the strandings, but predetermines the outcome of that evaluation stating that it is “highly likely” the proposed measures will be found to be protective of shortnose sturgeon. DEP lists four reasons why this is “likely” to be the case, but none of the four reasons address factors that would improve sturgeons’ chances of avoiding or otherwise being able to

⁵⁷ CRC Sturgeon Letter at 2. DEP must inquire with FirstLight regarding evidence of prior sturgeon strandings and outcomes to determine frequency of occurrence.

⁵⁸ CRC Sturgeon Letter at 2–3, n.14 (citing Letter from J. Mark Robinson, Director, Division of Project Compliance and Administration, FERC to Nancy Haley, Protected Species Program, NMFS, Sept. 13, 1993, Accession No. 199309230178). This letter is part of a longer exchange between NMFS and FERC regarding potential stranding and harm to shortnose sturgeon. *See* Letter from J. Mark Robinson, Director, Division of Project Compliance and Administration, FERC to Nancy Haley, Protected Species Program, NMFS, Aug. 19, 1993, Accession No. 199308190100.

⁵⁹ Draft WQC at 34.

⁶⁰ Affidavit of Boyd Kynard, at ¶¶ 4–10, attached as Exhibit B (hereinafter “Kynard Affidavit”).

escape strandings on their own.⁶¹ DEP must undertake its own independent evaluation of the evidence before it, and it should be skeptical of information provided by FirstLight on this issue. As a reminder, FirstLight, in its draft BA that concluded with a no jeopardy finding, stated that “no stranding has ever been observed at the Project,” which is inconsistent with FirstLight’s spokesperson’s acknowledgement after the July events that strandings occur “infrequently,” and NMFS’s previously stated concern about strandings there.

It is also inconsistent with the analogous situation at the Holyoke Dam where strandings were known to occur; for that reason, the Holyoke BiOp is more instructive than speculation about what NMFS will conclude after its reevaluation. In that BiOp, NMFS clearly identified the Holyoke Dam as the cause of the sturgeon strandings and noted that without active efforts to remove dozens of sturgeon stranded in the isolated pools below the dam between 1990 and 2013, “they could have died due to increased temperatures and decreased dissolved oxygen.”⁶² As it was, many of the rescued sturgeon “possessed heavy abrasions,” including “significant hemorrhaging along the ventral scutes and damage to their fins.”⁶³ NMFS further noted that climate change, including increased droughts and associated water withdrawals, can lead to more strandings: “If a river becomes too shallow or flows become intermittent, all shortnose sturgeon life stages, including adults, may become susceptible to strandings.”⁶⁴

DEP does not grapple with any of these impacts. Instead, it relies on conclusory statements regarding the minimum flow requirements consistency with the ESA and the Recovery Plan for shortnose sturgeon.⁶⁵ But these conclusions are inadequate and unsupported. CRC does not dispute that the proposed minimum flow requirements “are essential to support the survival and recovery of the [shortnose sturgeon] in the Connecticut River,”⁶⁶ but this is not the question DEP must answer in order to issue a WQC. The relevant question is whether increased flows, above the proposed minimum flows, such as those proposed by CRC’s experts, are also needed to support the survival and recovery of shortnose sturgeon. DEP never answers this question; rather it avoids it by focusing on flows purportedly need to protect non-aquatic plants.

DEP also avoids the question by claiming that the proposed flows are consistent with the requirements of Section 7(a)(1) and 7(a)(2) of the Endangered Species Act (“ESA”), but DEP does not provide any support for this claim.⁶⁷ DEP also states that the agreed upon minimum flows are consistent with section 3.1.1 of the Shortnose Sturgeon Recovery Plan, but again fails to provide a citation or any evidence for its claim.⁶⁸ Section (7)(a)(1) requires federal agencies to use their authority to further the goals of listed species’ conservation. Under Section 7(a)(2) of the ESA, Federal agencies are required to ensure, via consultation with the Services, that any actions authorized, funded, or carried out are not likely to jeopardize species or adversely affect

⁶¹ Draft WQC at 34–35.

⁶² Holyoke BiOp at 70.

⁶³ Holyoke BiOp at 108; *see also* Kynard Affidavit at ¶¶ 9–10.

⁶⁴ Holyoke BiOp at 77–78.

⁶⁵ Draft WQC at 34.

⁶⁶ Draft WQC at 34.

⁶⁷ Draft WQC at 34.

⁶⁸ Draft WQC at 34. DEP also fails to address whether the shortnose sturgeon Recovery Plan, which is 27 years old and likely based on data far older than that, is the correct measuring stick for recovery of the species today. NMFS, Final Recovery Plan for the Shortnose Sturgeon (Dec. 1998) (hereinafter “SNS Recovery Plan”).

critical habitat. Here, consultation under 7(a)(2) of the ESA has not been completed, leaving a significant question as to the extent of relicensing impacts on shortnose sturgeon. Absent a formal finding from NMFS as to whether the project is likely to adversely affect shortnose sturgeon, any statement regarding the sufficiency of the Flows and Fish Passage Settlement Agreement (“FFP”) at this point is premature and cannot serve as a justification to grant WQC.

Several serious impacts to shortnose sturgeon remain as areas of concern under the ESA. First, the FFP did not take sturgeon passage into account in its focus on other species, as noted by NMFS in its comments on the FFP.⁶⁹ Second, NMFS also noted the impacts below the dam: “Manipulation of flow below the Turners Falls Dam has direct effects on spawning and rearing of shortnose sturgeon, including limiting available habitat, disrupting and displacing spawning adults, and displacing or destroying early life stages.”⁷⁰ Finally, strandings below the dam constitute “take” under Section 9 of the ESA.⁷¹ These serious impacts to shortnose sturgeon should be considered by DEP at this critical juncture, and DEP cannot use speculation about compliance with the ESA as justification for granting the WQC.

DEP must impose more definitive conditions to protect, restore and enhance shortnose sturgeon and their habitat both above and below TFD, as well as facilitate sturgeon passage. As one specific example, at Holyoke the shortnose sturgeon handling plan included a requirement that facility staff “inspect pools below the dam for stranded sturgeon anytime conditions are such that these isolated pools may occur.”⁷² Currently, the draft BA for sturgeon at Turners Falls includes a shortnose sturgeon handling plan that only involves sturgeon that make it into the new fishway lift. As the Holyoke BiOp recognized, the facility operator—here, FirstLight—is responsible for dropping flows that cause isolated pools and therefore should be responsible for ensuring no shortnose sturgeon are stranded. The only reason the stranded sturgeons were discovered and rescued in July 2024 was because passers-by happened to see and report them. Given the precedent at Holyoke, DEP does not need to wait for NMFS to finish its ESA consultation to impose such a condition as part of the shortnose sturgeon handling plan for the FirstLight Projects. DEP also could, for instance, include conditions requiring FirstLight to achieve the fish passage outcomes for shortnose sturgeon that are listed on page 35 of the draft WQC. These outcomes include designing passage at TFD specifically for shortnose sturgeon and requiring barrier net design at NFM that is protective for shortnose sturgeon. DEP should not rely on other entities to design or include measures that DEP knows are needed to be protective of shortnose sturgeon; DEP should mandate those designs and measures as conditions of the WQC and ensure they are implemented as timely as possible.

2. DEP Does Not Adequately Address New Environmental DNA Evidence of Shortnose Sturgeon Above Turners Falls Dam

Like with the new stranding evidence, DEP acknowledges but attempts to downplay and does not meaningfully analyze the new environmental DNA (“eDNA”) evidence of shortnose sturgeon above TFD, especially as it relates to impacts on sturgeon from the operations of NFM.

⁶⁹ NMFS Comments and Preliminary Prescription on FFP at 35.

⁷⁰ NMFS Comments and Preliminary Prescription on FFP at 35.

⁷¹ See Kynard Affidavit, at ¶ 15.

⁷² Holyoke BiOp at 109.

Particularly troubling is DEP's reference to "other eDNA studies upstream of the Turners Falls Dam have not resulted in the detection of any shortnose sturgeon between Turners Falls and Bellows Falls."⁷³ Although unstated, CRC can only presume DEP is referring to FirstLight's eDNA study, which, as CRC has noted, contained multiple flaws with its methodology since samples were collected at the surface during a rainstorm to try to detect a bottom dwelling fish. DEP's mention of this eDNA sampling event, without also mentioning the criticisms of the methodology, creates a false equivalency for the public between those negative results and CRC's positive eDNA hits.

Importantly, DEP acknowledges that, regardless of how they arrived there, the shortnose sturgeon above Turners Falls Dam are protected by both federal and state endangered species laws, but as pointed out above, NMFS is still evaluating potential impacts. CRC does not dispute that more information and analysis is needed. The Connecticut River Migratory Fish Restoration Cooperative also issued a statement in November 2024 calling for more information to be collected in a timely manner "to determine whether hydropower project operations, or other activities, may affect shortnose sturgeon above [TFD]." But, in order to certify compliance with WQS, DEP must undertake its own analysis of impacts to ensure this sensitive aquatic life use will be protected and enhanced.

DEP speculates that the fish passage conditions currently proposed will be "highly likely" to be protective of shortnose sturgeon, "or will be designed during design phases" to be protective.⁷⁴ But it is DEP's duty to ensure, not just hope, that fish passage conditions will protect and restore ALUs. It is unclear from the Draft WQC what designated or existing use in the impoundment DEP is identifying as the most sensitive use, but state and federally endangered sturgeon certainly qualify. Accordingly, it is incumbent upon DEP to include conditions in the WQC that are protective of sturgeon living in the impoundment, including conditions mandating the barrier net at NFM and downstream fish passage installations be designed to provide maximum protections for sturgeon at all life stages.⁷⁵ DEP's states that "[i]f correctly designed and operated, the upstream and downstream fish passage systems at TFD could be a substantial gain for the Connecticut River shortnose sturgeon population, opening miles of previously blocked habitat."⁷⁶ CRC does not disagree with this premise, but it is DEP's duty to ensure this *is* the outcome instead of musing about what would happen *if* it happens.

C. DEP Must Impose Additional Conditions to Protect Migratory Fish

1. Fish Passage at Turners Falls Dam

DEP contends that American Shad (*Alosa sapidissima*) modeling prioritizes downstream passage before upstream and that concurrent installation is difficult to coordinate due to complexity of dam construction.⁷⁷ CRC urges DEP to reconsider simultaneous installation of up- and downstream passage at TFD in light of undue deference to the FFP and new evidence of

⁷³ Draft WQC at 33–34.

⁷⁴ Draft WQC at 34.

⁷⁵ See Kynard Affidavit at ¶¶ 11–15.

⁷⁶ Draft WQC at 35.

⁷⁷ Draft WQC at 29–33.

shortnose sturgeon above the TFD. Regardless of whether simultaneous installation occurs, DEP must require fish passage installation on shorter timeframes than currently contemplated.

The Draft WQC acknowledges that simultaneous installation is possible from a “theoretical engineering standpoint” and that “it would be ideal to install both the upstream and downstream passages simultaneously.”⁷⁸ However, DEP defers to the FFP and characterizes phased installation as a “balance of many interests and tradeoffs” and “a compromise that ... federal and state experts deemed worthwhile.”⁷⁹ Rather than defer to a compromise “deemed worthwhile,” DEP has a duty under CWA § 401 and the WQS to independently certify and condition federal licenses in order to protect and enhance water quality.

DEP appears to support its conclusion that simultaneous installation is infeasible based on the complexity of the dam operations and Project. As part of that assessment, DEP discounts CRC’s expert testimony from Edwin Zapel’s on the grounds that a comparison made between TFD and another dam project is not perfectly analogous. Specifically, DEP claims Mr. Zapel is unaware of project complexities associated with the FirstLight Projects, including environmental permitting, that will require more time than the Diablo Dam project he opines is analogous.⁸⁰ But it is clear in Mr. Zapel’s affidavit that he has taken the differences between the two projects into account, as he acknowledges “no agency input was required on the Diablo trashrack design” and “agency review and input on the proposed Cabot Station trashrack [is] expected and included.”⁸¹ So, contrary to DEP’s criticism, Mr. Zapel did take into account FirstLight Projects’ complexities and still opined the Cabot Station trashrack could be completed on a faster timeline than DEP has proposed.

Finally, DEP also appears to support its conclusion to not require simultaneous installation based on the status of American Shad: “While it would be ideal to install both the upstream and downstream passages simultaneously, that is not compelled by the status of the American Shad population.”⁸² The presence of endangered shortnose sturgeon both above and below the dam changes this calculus by vastly increasing the benefit of simultaneous installation. DEP’s failure to take endangered sturgeon into account when discussing the benefits of simultaneous installation is a fundamental flaw in the agency’s analysis.

2. DEP Should Require Installation of the Barrier Net at the Northfield Mountain Pumped Storage Facility in Three Years

CRC acknowledges that DEP credits Mr. Zapel’s expertise and amended the deadline to install a barrier net at the NFM intake by June 1 of Year 5 after the license rather than by Year 7.⁸³ As a result, DEP imposed Special Conditions Nos. 20–22 that amend Proposed Articles B200–220 regarding timelines for operations, and effectiveness testing.⁸⁴

⁷⁸ Draft WQC at 32.

⁷⁹ Draft WQC at 32.

⁸⁰ Draft WQC at 32.

⁸¹ Zapel Affidavit at 15.

⁸² Draft WQC at 32.

⁸³ Draft WQC at 35–36, 74.

⁸⁴ Draft WQC at 36.

Given that Mr. Zapel’s affidavit concluded that the barrier net should be installed within three years, it is unclear why DEP imposed a five-year installation deadline. Moreover, DEP fails to explain why installation within three years is infeasible. In addition to being “persuaded” by Mr. Zapel, DEP bases its determination on three additional factors. First, the barrier net is entirely separate from upstream and downstream passage facilities so there is no need to install the net serially with fish passage.⁸⁵ Second, the presence of shortnose sturgeon above the Turners Falls elevates the importance of expeditiously installing a barrier net to protect these endangered fish from entrainment.⁸⁶ Third, FirstLight’s previously proposed Amended Final License Application stated the net could be operational by Year 5. DEP also points to FirstLight’s Gantt chart asserting that from design to installation the barrier net will take five years.⁸⁷

CRC contends that none of these factors can explain why DEP rejected the three-year timeline Mr. Zapel proposed based on his experience with a more complicated scenario.⁸⁸ The presence of shortnose sturgeon makes faster installation all the more important.

Finally, CRC notes that while the Special Conditions update the timing for effectiveness testing, there appears to be a typo in Special Condition No. 22.⁸⁹ Under the “Effectiveness Testing of Round 1 AMMs – Years 10 and 11,” the draft certification states that the Licensee shall “provide the effectiveness study report ... by February 1 of Years 15 and 16 for adult American Shad.”⁹⁰ The Year 15 and 16 timeframe was the originally proposed timing in FirstLight’s 401 application and does not reflect the updated timeline in the Draft WQC.⁹¹ The effectiveness testing for juvenile American Shad and adult American Eel correctly lists the deadlines for the first round of effectiveness testing as Years 11 and 12.⁹²

D. DEP Has Not Meet Its Burden To Show That Erosion Above Turners Falls Dam Will Move Water Quality From Impaired to Attainment

On September 25, 2024, CRC staff toured the Connecticut River from Turners Falls Dam to just upstream of the MA/NH/VT state line to collect evidence of the current state of erosion on the riverbanks. The attached Exhibit C⁹³ shows some highlighted photos that indicate extensive erosion along much of the Connecticut River, with frequent notching at the typical level of water fluctuations. The hypothesis that erosion is largely caused by high flow events does not seem logical based on observation of the banks. The full set of photos was submitted with this comment via a Sharepoint Folder from DEP. DEP had originally asked CRC to provide a report on which sites are new sites of erosion since 2014, and which sites are highlighted as priority sites for mitigation. CRC believes that a comprehensive review is needed in order to assess the

⁸⁵ Draft WQC at 35.

⁸⁶ Draft WQC at 36.

⁸⁷ Draft WQC at 35.

⁸⁸ Draft WQC at 36.

⁸⁹ Draft WQC at 76.

⁹⁰ Draft WQC at 76.

⁹¹ Compare FirstLight 401 Application at 46–49 with Draft WQC at 76.

⁹² Draft WQC at 76.

⁹³ Connecticut River Conservancy Photo Log: The Current State of Erosion as of Sept 25, 2024. Included as Exhibit C.

answers for what DEP is looking for. The comprehensive review of the erosion sites should be looked at as a part of Appendix F: Erosion Mitigation, Stabilization, and Monitoring Plan. CRC shares perspective with Franklin Regional Council of Governments’ (“FRCOG”) in this regard. CRC is in complete alignment with FRCOG on how DEP needs to take action to improve the state of erosion on the riverbanks. FRCOG’s comments are included here as Exhibit E⁹⁴. CRC fully incorporates FRCOG’s comment by reference, acknowledging the valuable insights and recommendations provided by the organization's historical tracking of the issue.

Additionally, Exhibit D, the new expert report⁹⁵ on erosion impacts in TFI provided by CRC’s hired erosion experts at Princeton Hydro further supports the argument that the FirstLight project operations cause severe erosion and must be addressed more strictly by the WQC.

E. DEP Has Not Adequately Taken Into Account Reasonably Foreseeable Impacts of Climate Change

Climate change impacts nearly every aspect of FirstLight’s Projects from water quality and temperature to changed flows, shifting energy demands, and infrastructure viability, among other implications. However, the Draft WQC focuses discussion of climate change almost exclusively on implications for timing of seasonal migrations.⁹⁶ While agreeing that climate change has implications on fish passage seasonality, CRC notes that climate change also implicates flows, decommissioning funding, water quality, and the length of the license term among other aspects of this WQC. Because DEP discusses only fish passage timing in its “consideration of climate change” section, CRC mainly focuses on fish passage here and will note how and where climate change impacts other aspects of the water quality certification in the appropriate section.

In theory, CRC supports DEP’s imposition of Special Condition No. 31, which requires FirstLight to comply with United States Fish and Wildlife Service’s (“USFWS”) annual schedules for opening and closing fish passage facilities, which DEP says “can account for climate-induced changes in migration timing for affected fish.”⁹⁷ However, while there is no question USFWS schedules “can” account for climate-induced changes,” the relevant question for DEP is will they? Reliance on the current administration’s USFWS to account in any way for climate change given its early actions and policies that are antagonistic toward addressing climate change is an unreasonable and pollyannaish position for DEP to take. DEP cannot assume USFWS’s schedules will take climate change into account and therefore must have an alternative condition to accomplish this result.

Additionally, CRC supports the imposition of Special Condition No. 26 requiring water quality monitoring to screen for “adverse impact [that] can develop over time, particularly from climate

⁹⁴ FRCOG Comment on Water Quality Certification with Conditions Firstlight Hydroelectric Project FERC License Nos. 1889 (Turners Falls) and 2485 (Northfield Mountain) (Feb. 24, 2025). Included as Exhibit E.

⁹⁵ Princeton Hydro, LLC, Comment on Water Quality Certification with Conditions Firstlight Hydroelectric Project FERC License Nos. 1889 (Turners Falls) and 2485 (Northfield Mountain) (Feb. 24, 2025). Included as Exhibit D.

⁹⁶ See Draft WQC at 45.

⁹⁷ Draft WQC at 45, 81.

change.”⁹⁸ CRC urges DEP to consider the broader implications of climate change on the region and on fish species in the Project area and to incorporate greater climate change mitigation and adaptation into the final WQC.

The bulk of DEP’s discussion of climate change comes on page 45 of the Draft WQC and amounts to three scant paragraphs, mostly quoting NMFS’s preliminary prescriptions.⁹⁹ DEP’s consideration of climate change relies heavily NFMS’s observation that “fine scale predictions on how climate change will impact [the Project] area are not available” leading to “significant uncertainty in the rate and timing of change” and difficulty in “predict[ing] the impact of these changes on any particular species.”¹⁰⁰ While true that NMFS notes the lack of granular modeling in the Project area, NMFS also notes that there is general information available regarding clear models in the Northeastern United States and in the Connecticut River watershed.¹⁰¹ In other contexts, NFMS has presumed that predictive models developed for nearby areas are a valid basis to project localized impacts.¹⁰²

CRC offers three main comments regarding DEP’s conclusions on climate change and timing of fish passage: (1) DEP does not fully address NMFS’s preliminary prescription analysis, (2) DEP does not address that the preliminary prescription is designed with American shad and eels in mind, not shortnose sturgeon now known to be present throughout the Project area, and (3) DEP should incorporate climate change analysis from NMFS’s Holyoke BiOp into this WQC.

First, DEP does not fully address NMFS’s analysis. As a result, DEP does not address more general observations and principles applicable to the Project area. For instance, NFMS highlights that:

[d]ams can exacerbate the effects of climate change by altering streamflow temperature via increased water residence times and decreased daily temperature fluctuations. When droughts occur, migratory fish experience both temperature and oxygen stress and become crowded with predators into small areas as habitat disappears. *Changes in magnitude and duration of future summer and fall low flows in the Northeast U.S. have been documented and intensified drought conditions are likely.*¹⁰³

Greater density of fishes, reduced flow, reduced volume, and increased temperature can also lead to high fish mortality.¹⁰⁴ As such, despite difficulty in predicting the exact climate change impacts on the Project area and on particular species, NMFS concludes that “ensuring access to a diversity of suitable habitat, including climate resistant habitats, is essential for the continued

⁹⁸ Draft WQC at 42, 77–79. CRC endorses the acknowledgment that climate change will exacerbate adverse water quality impacts. However, CRC echoes FRCOG’s comments regarding Special Condition No. 26. Namely, it is also unclear to CRC exactly how DEP arrived at these particular monitoring parameters.

⁹⁹ FERC Accession No. 20240521-5074

¹⁰⁰ Draft WQC at 45 (quoting NMFS Preliminary Prescription at 13).

¹⁰¹ Draft WQC at 45 (quoting NMFS’ Preliminary Prescription at 13).

¹⁰² See Holyoke BiOp at 74.

¹⁰³ NMFS Comments and Preliminary Prescription on FFP at 13 (emphasis added) (internal citations omitted)

¹⁰⁴ NMFS Comments and Preliminary Prescription on FFP at 14.

survival and recovery potential of diadromous fish.”¹⁰⁵ Flexibility in timing of fish passage is surely part of this goal, but DEP could ensure access to habitat, including increasing flows below the dam.

Second, NFMS’s prescription is assessed in order to “provide American shad and American eel safe and timely access to climate resilient habitat upstream of the Project.”¹⁰⁶ As such, this prescription, and DEP’s reliance on it, is out-of-date as it does not consider the presence of shortnose sturgeon both above and below Turners Falls Dam or the strandings of shortnose sturgeon below the dam due to “natural or *unnatural* high flow events” followed by “naturally or *unnaturally*” decreased flows.¹⁰⁷ This mismatch between assessment and reality is particularly troubling given the need for ensuring access to habitat,¹⁰⁸ alongside likely intensifying droughts, changes in low flow periods and the lack of planned-for up- and downstream passage for shortnose sturgeon at Turners Falls. As discussed previously in this comment, DEP can and should mandate conditions that will ensure the protection and recover of shortnose sturgeon both below and above TFD.

Third, given the geographic proximity and overall similarity, CRC urges DEP to consider conclusions of the Holyoke BiOp. This BiOp provides more detail on the regional and Project area impacts of climate change and on general and Project area-specific likely impacts on shortnose sturgeon. As an initial matter, the Holyoke BiOp confronted similar modeling and data constraints as the current water quality standard certification: “While we can make some predictions on the likely effect of climate change on [shortnose and Atlantic sturgeon], without modeling and additional scientific data these predictions remain speculative.”¹⁰⁹ Nonetheless, despite these limitations, the BiOp goes on to more fully consider climate change impacts.

The Holyoke BiOP makes four key observations regarding climate impact on the region generally that relate to the certification at issue here:

1. Change will occur within the term of the proposed FERC license. “Warming is very likely to continue in the U.S. over the next 25 to 50 years, regardless of reduction in GHGs, due to emissions that have already occurred. It is very likely that the magnitude and frequency of ecosystem changes will continue to increase in the next 25 to 50 years, and it is possible that the rate of change will accelerate.”¹¹⁰ Given that change will continue and potentially accelerate over the course of the license (whether a 30-year term as CRC advocates or a 50-year term as FirstLight wants), it is imperative that more robust conditions be imposed now.
2. Excessive water withdrawals and land development have already stressed many rivers and “this stress may be exacerbated by changes in climate” such that “anticipating and planning adaptive strategies may be critical.”¹¹¹ Crucially,

¹⁰⁵ NMFS Comments and Preliminary Prescription on FFP at 14.

¹⁰⁶ NMFS Comments and Preliminary Prescription on FFP at 13.

¹⁰⁷ Draft WQC at 34 (emphasis added).

¹⁰⁸ NMFS Comments and Preliminary Prescription on FFP at 14.

¹⁰⁹ Holyoke BiOp at 76.

¹¹⁰ Holyoke BiOp at 71.

¹¹¹ Holyoke BiOp at 71.

segments at issue here are listed as impaired by dewatering on Massachusetts's 303(d) list.¹¹² As such, water quality certification should put greater emphasis on developing critical adaptive strategies given the confluence of stressors on this waterway above and beyond timing of fish passage and barrier net installation.

3. "Because stresses on water quality are associated with many activities, the impacts of the existing stresses are likely to be exacerbated by climate change."¹¹³
4. Finally, analogous modeling suggests water temperature increases of "somewhere between 3–4 °C by 2100 and a pH drop of 0.3–0.4 units by 2100" based on predictive models for comparable and proximate waters.¹¹⁴ "While we are not able to find predictive models for the Connecticut River, given the geographic proximity of these waters to the Northeast, we assume that predictions would be similar" and "assuming that these predictions also apply to the Project area (around Holyoke), one could anticipate similar conditions in the Project area over the same time period."¹¹⁵

Given the proximity of Holyoke to the Project area in question here, these same analogous data and assumption of applicability should apply. Rather than waiting to see how climate change impacts develop, DEP should proceed assuming the worst-case scenarios accepted in the Holyoke BiOp. Based on these climate observations, NMFS' Holyoke BiOp outlined potential impacts on shortnose sturgeon. Given the now-known presence of sturgeon above and below TFD, these species-specific concerns are especially pertinent to the current Project. While changing migration patterns is among those impacts discussed, it is far from the only impact considered.¹¹⁶ Generally, the BiOp highlights the degree to which shortnose sturgeon are vulnerable to reduced flow, whether climate or human driven:

Increased droughts (and water withdrawal for human use) predicted by some models in some areas may cause loss of habitat including loss of access to spawning habitat. If a river becomes too shallow or flows become intermittent, all shortnose sturgeon life stages, including adults, may become susceptible to strandings. Low flow and drought conditions are also expected to cause additional water quality issues.¹¹⁷

Given the proximity of shallow and low flow and spawning habitat below the Turners Falls, these concerns are particularly worrisome. Additionally, the BiOp notes that climate change in the region could impact distribution of forage species, which would have an indirect impact on sturgeon.¹¹⁸ Finally, the BiOp notes that there is limited information on thermal tolerance of

¹¹² See Massachusetts' 303(d) list, MA34-03, 04 at 167-8.

¹¹³ Holyoke BiOp at 71.

¹¹⁴ Holyoke BiOp at 74.

¹¹⁵ Holyoke BiOp at 74.

¹¹⁶ Holyoke BiOp at 74–76.

¹¹⁷ Holyoke BiOp at 74.

¹¹⁸ Holyoke BiOp at 75.

shortnose sturgeon meaning that the anticipated 3 to 4 °C increase in water temperature could have significant consequences.¹¹⁹

Taken together, there is a much broader array of potential impacts for fish and fish passage beyond the timing of migrations. While recognizing that data and modeling limit the extent to which DEP can anticipate precise climate change impacts, CRC urges DEP to be less conservative in its analysis in order to proactively consider the climate change implications on fish passage, including impacts to shortnose sturgeon that have not been closely analyzed to date.

F. DEP's Canal Drawdown Process To Be Strengthened For Efficacy And Longevity

1. CRC Consultation Should Be Required In The Protection Plan

In special Condition 32. Turners Falls Canal Drawdown Aquatic Organism Protection, DEP requires that the Protection Plan be developed by the Licensee with consultation from USFWS, MassWildlife, and DEP. As the leading organization for river protection in the watershed, CRC's input should also be required in the development of the Plan. For years, CRC has led Canal Drawdown Rescues. CRC and USFWS have partnered on this effort and hold the expertise needed to create a Protection Plan that would be submitted to the Commission.

2. Canal Drawdown Team Should Include CRC And The Team Should Not Be Disbanded

In b) of Special Condition 32., DEP requires the creation of a temporary Canal Drawdown Team composed of USFWS, MassWildlife, and DEP and allows the Team to be disbanded after three years. The Canal Drawdown Team should also include CRC, as CRC has led the process and has developed needed expertise. The Canal Drawdown team should not be temporary, as the Licensee has not shown willingness nor expertise to carry out the Rescue in the canal drawdown process and without help from USFWS and CRC, and therefore would likely not be able to carry out the rescue effectively on their own accord. For the sake of protecting the aquatic organisms that FirstLight has normally let die year after year, it is imperative to have CRC and USFWS be involved in the rescue for the remainder of the license.

3. FirstLight Should Be Required To Participate In and Fund the Canal Drawdown Rescue

The Licensee should be required to provide staff to complete the rescue and also offer financial compensation to the experts from USFWS and CRC for running the Canal Drawdown Rescue.

4. Information Collected From Canal Drawdown Should Be Publicly Shared

CRC recommends that DEP make it mandatory for FirstLight to share the results of the surveys publicly, which will allow the next license to be informed by data collected starting now.

¹¹⁹ Holyoke BiOp at 75–76.

G. DEP Inexplicably Fails To Address Decommissioning Funding As A Condition Of The WQC

CRC has consistently held the position that DEP, as the state agency responsible for water quality and water quality certification under CWA § 401, has the authority to require financial assurances as a condition of FirstLight's WQC. CRC provided DEP with a Legal Memo on December 23, 2021 and sent a letter to Secretary Card on June 13, 2022 outlining DEP's legal authority to require financial assurances. CRC incorporated these two documents by reference into its June 3, 2024 comment on FirstLight's 401 certification application.

Nonetheless, the DEP's Draft WQC is silent on decommissioning funding. Given DEP has had more than four years to assess CRC's request and comments on decommissioning funding, such silence is unacceptable. Even if DEP does not agree with CRC's reasoning, DEP is under an obligation to consider it as it must consider all reasonably supported comments and explain why it is not requiring financial assurances for when the Project is decommissioned in the future. Once again, CRC sets out the basis for DEP's authority to require decommissioning funding and the public benefit of doing so.

There is ample support in Massachusetts' WQS, 314 CMR 4.00, *et. seq.*, for the goal of restoring rivers to their original conditions, which necessarily includes decommissioning and removing a hydropower facility at the end of its useful life. Given this clear and direct nexus to water quality, a condition in a state's CWA § 401 certification requiring hydropower facilities provide financial assurances sufficient to decommission and remove a non-operating hydropower project falls squarely within the scope of CWA § 401(d).

We set forth the specific Massachusetts WQS supporting such a condition below:

314 CMR 4.01: Massachusetts WQS impose a “duty and responsibility” upon DEP to “protect the public health and enhance the quality and value of the water resources of the Commonwealth” and “direct[] the Department to take all action necessary or appropriate to secure the Commonwealth the benefits of the Clean Water Act.”¹²⁰ In turn, the Purpose provision of the WQS explicitly incorporates the primary objective of the CWA, which is “the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters.”¹²¹ The plain meaning of “integrity” is the state of being whole and undivided.” Dams, whether operational or not, divide rivers and disrupt their chemical (by, for example, altering the pH of the river), physical (by, for example, unnaturally altering flow through a river segment), and biological integrity (by, for example, preventing fish migration). Decommissioning and removal financial assurances directly relate to the “restoration” prong, a value that is emphasized expressly in the state regulations, including those specific to dams as discussed further below. Moreover, the plain meaning of enhance—“to increase or improve in value, quality, desirability, or attractiveness”¹²²—is forward-looking in that it reflects a positive change from a current

¹²⁰ 314 CMR 4.01(3).

¹²¹ 314 CMR 4.01(3) (emphasis added).

¹²² *Enhance*, Merriamwebster.com, <https://www.merriam-webster.com/dictionary/enhance#:~:text=1,%2C%20quality%2C%20desirability%2C%20or%20attractiveness> (last visited Feb. 23, 2025).

condition to a better future one. Therefore, future planning through decommissioning fits squarely within the forward-looking mandate of “enhance[ing] the quality ... of water resources of the Commonwealth.”¹²³ Thus, conditioning this WQC on FirstLight providing adequate financial assurances for decommissioning and removal falls squarely within the very purpose of Massachusetts WQS and the cooperative federalism that the Clean Water Act envisions.

314 CMR 4.03(3): The Hydrologic Conditions provision of Massachusetts’ WQS directly addresses state waters containing dams and other hydropower facilities, and sets forth a clear mandate: “When the Department issues a 401 Water Quality Certification of an activity subject to licensing by the Federal Energy Regulatory Commission, flows shall be maintained or *restored* to protect existing and designated uses.”¹²⁴ This is perhaps the most applicable WQS provision as it deals directly with FERC-licensed dams and CWA § 401 certifications, and specifically contemplates *restoration* of flows, which would occur if a dam or other hydropower facility were decommissioned and removed. Thus, this provision supports requiring financial assurances that would plan for and thereby enable such restoration.

314 CMR 4.03(4): Massachusetts WQS must balance competing public interest goals when it comes to *operating* hydropower facilities. In cases where dams preclude the attainment of a designated use, DEP may remove that use, after a Use Attainability Analysis, so long as “it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use.”¹²⁵ This provision provides support for requiring financial assurances in two ways. First, it explicitly contemplates restoring a river to “its original [undammed] condition,” which is precisely what funding decommissioning and removal would accomplish.¹²⁶ Second, it highlights a negative, and perhaps unintended, consequence of *not* requiring financial assurances. Once a dam is no longer operating and therefore no longer making money, it may make it easier for the facility owner/operator to argue that it is not “feasible” to restore the waterbody to its original condition thus paving the way for the removal of whatever use cannot be obtained while the dam exists. In other words, failing to provide financial assurance allows owners / operators to externalize the costs of operation by passing those costs on to future generations. On the other hand, if financial assurances for decommissioning and removal are required as part of the WQC, it negates a non-feasibility argument from the facility owner/operator.

314 CMR 4.05 (Designated Uses): Massachusetts WQS designate the most sensitive uses “for which the various waters of the Commonwealth shall be enhanced, maintained and protected.”¹²⁷ The stretch of the Connecticut River adjacent to the TFD and the NFM is listed as Class B waters, which are designated “as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation.”¹²⁸ It is indisputable that the TFD and NFM have negative impacts—including flow impairment, temperature increases, impingement and entrainment, and habitat

¹²³ 314 CMR 4.01(3).

¹²⁴ 314 CMR 4.03(3)(b) (emphasis added).

¹²⁵ 314 CMR 4.03(4)(d).

¹²⁶ 314 CMR 4.03(4)(a)(4).

¹²⁷ 314 CMR 4.01(3).

¹²⁸ 314 CMR 4.05(3)(b).

alteration and erosion, among others—on these designated uses. Once the facilities are no longer operational, their presence in the river will *per se* violate WQS. Further, given that the FERC licenses last for decades, there is tremendous uncertainty regarding what the existing and designated uses of that portion of the Connecticut River will be when the licenses expire. For example, will there be additional species listed as threatened or endangered under the ESA or MESA in that portion of the river that are negatively impacted by the presence of the non-operational hydropower facilities? Indeed, after CRC initially commented on the FirstLight’s 401 application, CRC scientists found new eDNA evidence of federal and state-listed endangered shortnose sturgeon above TFD. Requiring financial assurances sufficient to decommission and remove such facilities—especially given the uncertainty of river conditions when the licenses expire—has a direct nexus to and clearly supports DEP’s mandatory duty set forth in the WQS to protect and enhance designated uses.

314 CMR 4.05(5): In addition to the specific water quality criteria associated with Class B waters to protect and enhance those designated uses, all surface waters in Massachusetts shall be free from “from alterations that adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, or adversely affect populations of non-mobile or sessile benthic organisms.”¹²⁹ Non-operational dams constitute such alterations, and, as such, requiring financial assurances for their decommissioning and removal is supported by this WQS as well.

THE PUBLIC TRUST DOCTRINE SUPPORTS REQUIRING FINANCIAL ASSURANCES FOR DECOMMISSIONING AND REMOVAL COSTS

The public trust doctrine, codified in both the Massachusetts Constitution, as well as the General Laws, provides another basis of support to require financial assurances for decommissioning and removal of hydropower facilities.¹³⁰ Using trust-like language, DEP is charged with the “effective planning and management of water use and conservation in the commonwealth” to “ensure an adequate volume and quality of water for all citizens of the commonwealth, both present and future.”¹³¹ DEP, through its regulations, defines “trust lands” as “present and former waterways in which the fee simple, any easement, or other proprietary interest is held by the Commonwealth in trust for the benefit of the public.”¹³² These statutes and regulations are evidence of the Commonwealth of Massachusetts adopting the public trust doctrine into State law, which brings it within the purview of CWA 33 U.S.C. § 1341(d).

The Connecticut River is one of the few geographic areas explicitly listed as “trust lands” in state regulations.¹³³ Accordingly, Massachusetts can require financial assurances pursuant to its public trust obligations for the Connecticut River, which have been codified in state law. Arguably, *not* requiring such financial assurance would constitute a breach of Massachusetts’ duty to protect an identified trust resource. This is especially the case when a hydropower facility

¹²⁹ 314 CMR 4.05(5)(b).

¹³⁰ See Mass. Const. art. XLIX, as amended by art. XCVII; see also Mass. Gen. Laws Ann. ch. 91 § 2 (2016).

¹³¹ Mass. Gen. Laws Ann. ch. 21G, § 3 (2024).

¹³² 310 CMR § 9.02.

¹³³ See 310 CMR § 9.04(1)(b).

is no longer operational. At that point, there is no countervailing public benefit—electricity generation—to offset the ongoing impairment of the trust resource.

SOUND PUBLIC POLICY DEMANDS MASSACHUSETTS EXERCISE ITS LEGAL AUTHORITY TO REQUIRE FINANCIAL ASSURANCE

Hydropower facilities, like other large-scale infrastructure, require significant financial expenditures to decommission safely. Indeed, perhaps for that reason, requiring decommissioning funding for large infrastructure projects is not a novel concept. Industrial solar facilities, wind turbines, nuclear power plants, and landfills all pose environmental and public health risks to the communities where they are sited once their useful operational life is over. Accordingly, the facility owners are typically required to provide financial assurance, either at the federal, state or local level—often in the form of a surety bond or proof of a decommissioning fund—in order to build and/or continue operating such facilities. Requirements for such funds are good public policy to prevent host communities and/or taxpayers from bearing the financial burden if the owner/operator does not adequately plan for decommissioning.

Like other large energy and infrastructure projects, hydropower facilities, both large and small, are expensive to decommission. Additionally, such facilities pose similar environmental and public health risks and impacts when they are no longer operating as they did while in operation (e.g., ongoing adverse impacts to habitat, obstruction of fish passage, dangers of breaching and flooding risks). Moreover, hydropower facilities pose their own unique risks, that only accentuate the need for decommissioning funding, including (1) a clear trend — nationally and globally — toward removing old dams and restoring natural river flows; (2) direct impact on a public trust resource; and (3) lengthy federal licenses for dams that can last up to 50 years, meaning some of the dams being relicensed today will be nearly a century old (and some far older since they existed before their original FERC licenses) when their new license expires.

Unwillingness of the lead federal agency involved with dam relicensing to exercise their authority further underscores the importance of Massachusetts doing so. While FERC could condition its licenses with financial assurances for decommissioning and removal,¹³⁴ CRC is unaware of FERC ever exercising this authority. Thus, it is incumbent upon Massachusetts to exercise its authority under CWA § 401(d) and WQS to require such assurances. Such a proactive approach to financing dam removal would be consistent with Massachusetts' efforts to remove derelict dams throughout the state.

Financial assurances also would be consistent with the positions of several federal resource agencies. For example, the U.S. Fish and Wildlife Service recently told FERC it supported financial assurances for decommissioning funds, stating:

The Service also recommends that financial assurances address decommissioning costs, including the removal of project infrastructure and the restoration of habitat when a licensee or exemptee surrenders its license or otherwise voluntarily abandons a project. This would ensure projects that are abandoned do not pose a

¹³⁴ See 60 Fed. Reg. 339, 340 (Jan. 4, 1995).

risk to the environment and would reduce the risk that taxpayers and ratepayers would have to pay to remove project infrastructure and restore habitat if a project is abandoned.¹³⁵

The U.S. Fish and Wildlife Service clearly articulates the risk of *not* conditioning CWA § 401 certification on financial assurances for decommissioning and removal: local communities, taxpayers and ratepayers will be stuck with an enormous bill for removing obsolete, un-economical and un-safe dams and restoring river habitat.

Finally, decommissioning funding allows flexibility and prevents hydropower facilities such as TFD and NFM from becoming locked-in. Climate change and shifting energy demands inject significant uncertainty into long-term viability of hydroelectric project that underlines the importance of avoiding long-term lock-in. Absent decommissioning funds, by the time these facilities are un-economical, un-safe, or otherwise obsolete, removing them may be financially un-feasible. In other words, by issuing a WQC without decommissioning financial assurances, DEP makes it more likely that the facility will remain in place after the project no longer produces energy. Requiring financial assurance would allow much greater flexibility to respond to changing energy, climate, environmental, and economic needs in the future. Relatedly, one core benefit of periodic relicensing is to allow responsiveness to changing circumstances; the fact that decommissioning funding has not been commonplace in past hydro licenses is irrelevant to whether decommissioning funding should be adopted going forward.

Accordingly, because it is good public policy as evidenced by the similar requirements imposed on other energy-generating and/or potentially hazardous facilities, because of the unique factors involved with hydropower facilities, and because federal agencies have not exercised their authority to require decommissioning funding, Massachusetts must exercise its authority to require financial assurances for their decommissioning and removal.

H. DEP Should Require More Data Availability And Participation Opportunities For The Public

1. All information the Licensee is required to collect for their records or to send to DEP throughout the remainder of the license term should be accessible to the public. For example, Canal Drawdown Results, Erosion Monitoring results, Water Quality Monitoring, etc.
2. Over the course of the license, there should also be significant opportunity and requirement for public involvement. Citizens who live and recreate in this region should be firsthand involved throughout the course of the entire license, including the process of monitoring erosion. Local groups such as CRC, FRCOG, Town Commissions, and the Nolumbeka Project should all be able to weigh in on the

¹³⁵ See CRC's June 13, 2022 Letter to Secretary Card, Ex. 4 at 3 (citing U.S. Fish and Wildlife Service Comments on the Federal Energy Regulatory Commission's Notice of Inquiry on Financial Assurance Measures for Hydropower Projects, Docket RM21-9-000, at pdf page 4 (March 26, 2021)).

current state of erosion in the impoundment and on how to prevent the erosion from worsening.

Further, CRC stands in agreement with the local delegation of Jo Comerford, Natalie Blais, and Mindy Domb in what they are requesting for more public access to and participation in the new license.

I. DEP Must Consider State Climate Legislation’s Impact on Northfield Mountain Pumped Storage Project

An Act promoting a clean energy grid, advancing equity, and protecting ratepayers was signed into law by Governor Healey in November 2024. This legislation defined all storage facilities as clean energy facilities. The law mandates procurements by Massachusetts local electric distribution companies of long-term contracts for 5000 megawatts (“MW”) of energy storage in MA by 2030, and states that existing facilities shall be eligible. This means that the large-scale existing storage facility of NFM will be eligible for procurements, and because its facilities are already built, and because other utility-scale storage is still very limited, NFM may well be able to underbid other proposals and secure a large procurement for up to its full capacity of 1167 MW.

If so, FirstLight will reap enormous financial benefit from the procurements. Based on cost estimates of similar storage procurements in New York state, a procurement for almost 1200 MW could be worth almost \$480 million over the course of a 15-year contract. Depending on how the procurements are implemented, they could also incentivize NFM to pump and generate at times when it would not be profitable to do so based on the ISO-NE markets alone. This, especially in combination with larger upper-reservoir storage, means more water fluctuations of longer duration and more often. This would result in larger river height fluctuations and all the negative impacts on the river associated with that, such as erosion.

It is necessary for DEP to take this new law into consideration when thinking about granting a new license that will define how NFM can operate for the next 30-50 years.

J. DEP Should Use Its Authority To Require A 30-year License Term

The Federal Power Act allows for federal dam licenses to range between 30- and 50-year terms.¹³⁶ FirstLight seeks relicensing for 50 years at which point the facilities involved would be over a century old. Instead, CRC urges Massachusetts to use its authority under § 401 to impose a term of 30 years.

Against the backdrop of climate change, likelihood of increased drought and reduced flows, and shifting energy demands, a lengthy, 50-year term deprives DEP, and Massachusetts citizens more generally, from flexibility in protecting and enhancing state water quality. Climate change, as discussed above, creates considerable uncertainty and will very likely result in temperature

¹³⁶ 16 U.S.C. § 808(e) (“any license issued ... under this section shall be for a term which the [Commission] determines to be in the public interest but not less than 30 years, nor more than 50 years[.]”).

and flow alterations over the course of the next 25 to 50 years.¹³⁷ These changes in temperature and flow can impair designated uses of this stretch of the Connecticut River including use as habitat for fish, other aquatic life, and wildlife, primary and secondary contact recreation, and good aesthetic value.¹³⁸ Dams only exacerbate these climate-driven concerns.¹³⁹ A license that lasts for 50 years would mean that as conditions change, water quality deteriorates, and designated uses are harmed, DEP will be hamstrung and unable to adequately respond. Shortening the term of the license to 30 years complies with the FPA while also allowing DEP to reconsider whether additional conditions are necessary to protect and enhance water quality on a more reasonable timeline.

Additionally, federal, state, and local energy policy is likely to change in that time. As a result, FirstLight's Projects ongoing economic viability is far from certain over the next 50 years. Allowing a longer license increases the risk that the Projects will be obsolete by the licenses' end. This in turn increases the risk that the facilities will remain in place and/or the costs of removal will be borne by the public after FirstLight has wrung all the profit they could from the Projects, especially if DEP does not require decommissioning financial assurances.

Furthermore, it is true that this relicensing process has been going on for 13 years now and is not over. Granting a 50-year license really could mean a 65-year license.

It is shortsighted to permit a license of 50 years when it is clear that conditions on the ground are likely to substantially change within that time frame, and when the law allows a shorter term. Indeed, the very purpose of periodic licensing is to allow agencies to adapt to changing realities, whether climate driven or not. As such, Massachusetts should use its § 401 authority to set the term of FirstLight's license to a 30-year term.

¹³⁷ Holyoke BiOp at 71.

¹³⁸ See 314 CMR §4.06.

¹³⁹ NMFS Comments and Preliminary Prescription on FFP at 13.

IV. Conclusion

Under the current conditions, DEP should deny the WQC as the FirstLight Projects do not meet WQS. With the changes included here, DEP could impose additional conditions that balance the needs of FirstLight while still upholding necessary and required environmental protections.

The above comments outline ways in which DEP must improve the WQC in order to meet Massachusetts WQS. CRC urges DEP to closely consider these comments as it makes its final determination, so that the WQC meets applicable standards under federal and state law.

CRC appreciates the opportunity to comment during the WQC process. Please feel free to contact me, Nina Gordon-Kirsch, Massachusetts River Steward and the Connecticut River Conservancy, at ngordonkirsch@ctriver.org, or contact Rebecca Todd, Executive Director of the Connecticut River Conservancy, at rtodd@ctriver.org.

Thank you,



2/24/25

Nina Gordon-Kirsch
Massachusetts River Steward
Connecticut River Conservancy



2/24/25

Rebecca Todd
Executive Director
Connecticut River Conservancy



2/24/25

Andrew Fisk
Northeast Regional Director
American Rivers

Connecticut River Conservancy Comment Exhibit List*

Exhibit A	Affidavit of Michael Lew-Smith (Feb 24, 2025)
Exhibit B	Affidavit of Boyd Kynard (Feb 24, 2025)
Exhibit C	Connecticut River Conservancy Photo Log: The Current State of Erosion as of Sept 25, 2024
Exhibit D	Princeton Hydro, LLC, Comment on Water Quality Certification with Conditions Firstlight Hydroelectric Project FERC License Nos. 1889 (Turners Falls) and 2485 (Northfield Mountain) (Feb. 24, 2025).
Exhibit E	FRCOG Comment on Water Quality Certification with Conditions Firstlight Hydroelectric Project FERC License Nos. 1889 (Turners Falls) and 2485 (Northfield Mountain) (Feb. 24, 2025).

* These exhibits are attached to this comment document for reference. The complete set of photos from Exhibit C was too large to attach in an email and will be submitted to DEP via the Sharepoint folder that Elizabeth Stefanik sent to Nina Gordon-Kirsch on 2/20/25.

EARTH LAW PRACTICE PC Newton, MA

February 22, 2025

To: dep.hydro@mass.gov

Subject: **FirstLight 401 WQC**

Attn: Elizabeth Stefanik
MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Stefanik:

Earth Law Practice (ELP), a Massachusetts professional corporation, respectfully submits these comments regarding the draft WQC. The Draft does not reflect the needs, interests and rights of the Connecticut River to recover from ongoing devastation and to thrive as a healthy ecological entity. As a result ELP is deeply concerned about MassDEP's abandonment of the interests of the Connecticut River, the lifeblood of an ecosystem supporting expansive communities of life, in favor of the interests of a Canadian corporate being, that first is profiteering at the expense of the human and nonhuman communities of life.

First, ELP will demonstrate MassDEP's gross disregard of Section 106 to the National Historic Preservation Act of 1966 (NHPA), which requires MassDEP to conduct consultations with native Americans "early in the planning process."¹ MassDEP's conduct in this proceeding has failed to consider the interests of Indigenous tribes in the review of the 401 WQC application submitted by FirstLight. MassDEP rejected the tribes' submission of Indigenous knowledge regarding sites of cultural, religious and historical importance. MassDEP refused to consult with Indigenous knowledge experts. MassDEP denied its obligations imposed by the NHPA.

Second, ELP will argue that MassDEP is mandated to protect the people's Constitutional "right to . . . the natural . . . qualities of the environment." Mass. Const. Art. 49, *as amended by* Art. 97 ("Article 97"). Article 97 of the Massachusetts Constitution enshrines the right to nature as a fundamental right of Massachusetts residents and their posterity.

Third, ELP submits these comments to ask MassDEP, to engage in the WQC process based on Earth law principles, including the rights of nature and the rights of future generations

Earth law is "[t]he emerging body of law that protects, stabilizes, and restores the functional interdependency of Earth's life and life-support systems at the local, bioregional, and global levels. Earth law may be expressed in constitutional, statutory, common law, and customary law, as well as in treaties and other agreements both public and private." Zelle, et al., *Earth Law: Emerging Ecocentric Law—A Guide for*

¹ The Section 106 regulations at 36 C.F.R. § 800.2(c)(2)

Practitioners, Aspen Publishing (2020), p.2. The emergence of Earth law depends on reformative change within extant legal systems and government institutions, including MassDEP. These changes are occurring through legislative and judicial developments giving procedural and substantive rights to non-human nature and future generations, and through policy commitments to biodiversity preservation and sustainable development. These changes in human law are being catalyzed by the understanding of Earth's biochemical and geophysical laws.²

MassDEP must acknowledge the pre-emptive supremacy of Earth's biochemical and geophysical laws; it must not assume that Earth has the capacity to support perpetual limitless growth; and it must recognize that it cannot rely on precedent in this time of unprecedented planetary change.

I. MASSDEP HAS FAILED TO CONSIDER THE INTERESTS OF THE INDIGENOUS TRIBES UNDER THE SECTION 401 WATER QUALITY CERTIFICATION PROCESS.

Although the Facilities are located within traditional territories of the Indigenous people represented by Nolembeka, MassDEP has refused to consult with their representatives. Moreover, Timothy Jones, acting head of MassDEP's Division of Wetlands and Waterways, expressly denied MassDEP's legal obligation to consult with Indigenous experts regarding the significance of the Connecticut River to Indigenous communities.³ As pointed out by the Nolembeka Project⁴:

The dewatering of this important ancient river course has a profound effect on fish, plants, aquatic species and micro organisms that service the health and existence of a number of very important species of fish, including the shortnose sturgeon. The dewatering of the river also adversely affects indigenous, knowledge, beliefs and practices, grounded in social, spiritual, cultural, and natural systems that are frequently intertwined and inseparable. Moving water is a living spirit to Indigenous Peoples all over the world, with no exception here in the Connecticut River Valley.⁵

As detailed below, MassDEP is violating its legal duties and policy obligations by failing to consider the impact of the WQC on Indigenous tribes and by failing to take their interests into consideration.

A. MassDEP Has Failed To Comply With The Requirements Of Section 106 To The National Historic Preservation Act Of 1966 (NHPA)

MassDEP has not only failed to consider the detrimental impact of the 401 Water Quality

² Stockholm Resilience Center, Planetary Boundaries, <https://www.stockholmresilience.org/research/planetary-boundaries.html>

³ See slide from public hearing, Oct. 20, 2024 : "Tribal historic and cultural interests that are not regulated under state water quality laws" <chrome-extension://efaidnbmnnnibpcajpglclefindmkaj/https://www.mass.gov/doc/firstlight-power-401-wqc-public-information-session-slides-october-10-2024/download>. See also public information session, Oct. 10, 2024, starting at minute 58.

⁴ The Nolembeka Project, Inc. is a 501(c) (3) non-profit organization dedicated to the preservation of the history of Native Americans/American Indians of New England. <https://nolembekaproject.org/>

⁵ Nolembeka letter to FERC, May 19, 2024.

Certificate on Indigenous interests and on their cultural, historical and religious sites, it has asserted it has no obligation even to consult with Indigenous experts represented by the Nolembeka Project. Since the relicensing process for the Facilities was initiated over twelve years ago, the Elnu Abenaki Tribe, and the Chaubunagungamaug Band of Nipmuck Indians represented by the Nolembeka Project, have persistently sought to bring attention to their unique ecological, cultural and historical knowledge of the Connecticut River Valley.⁶ But to no avail.

MassDEP, as administrator of the Clean Water Act Section 401 Water Quality Certification in Massachusetts, is conducting the certification process for the application submitted by FirstLight in violation of Section 106 to the National Historic Preservation Act of 1966. NHPA requires MassDEP to consult with the interested Indigenous tribes prior to its submission of the draft WQC. MassDEP has rejected the tribes request for consultation by arguing that “Tribal historic and cultural interests ... are not regulated under state water quality laws.” They are “outside their jurisdiction.”⁷ MassDEP refuses to recognize the interests of the tribes as *owners* of a recognized historical site listed on the National Registry, the 10,000 year old indigenous village Wissatinnewag. Wissatinnewag is located on the west side of the Connecticut River directly below the Turners Falls Dam. It is a historical site under constant threat by the operations of the Facilities.

There is no good faith basis for MassDEP to deny its obligation to comply with the federal statutory obligation to consult with the tribes. As MassDEP has explained its role in issuing the WQC, it is “the certifying authority for the Commonwealth of Massachusetts for purposes of Section 401 of the Clean Water Act.” Consequently, it is bound by federal law, specifically, the NHPA.

MassDEP is also responsible to assess the project’s compliance with the Massachusetts Surface Water Quality Standards (SWQS), 314 CMR 4.00, and other appropriate requirements of state law through review of the project’s 401 Water Quality Certification (WQC) application.”⁸ Ignoring the comments submitted by Nolembeka explaining the adverse impacts of the dewatering of the River through the operation of the Facilities evidences MassDEP’s pervasive dereliction in its conduct of the relicensing process. The critical expert insight offered by Nolembeka is reflected by considering an Earth law concept called “biocultural rights”:

“... a new legal approach called biocultural rights is being developed, whose central premise is the relationship of profound unity and interdependence between nature and human species, and that has as a consequence a new socio-legal understanding in which nature should be taken seriously and with full rights. That is, as a subject of rights.”⁹

⁶ Under the National Historic Preservation Act (NHPA), “expert indigenous knowledge” refers to the body of observations, practices, beliefs, and knowledge developed by Indigenous peoples through their deep interaction with the environment, encompassing cultural, spiritual, and ecological understanding passed down through generations, which can be used to identify and assess the significance of historic properties that hold religious and cultural importance to tribes...; essentially, it is the specialized knowledge held by designated tribal representatives regarding the cultural and spiritual significance of places within their traditional territories.

⁷ See MassDEP presentation from Oct. 10, 2024.

⁸ Letter from David Hilgeman, to Debbie Anne Reese, MassDEP to FERC. Jun 20, 2024

⁹ Judgment T-622/16 (The Atrato River Case), Constitutional Court of Colombia (2016), p.98, translated by and available at Dignity Rights Project.

B. MassDEP's Conduct of this 401 WQC Process is in Violation of the Commonwealth's Environmental Justice Strategy

MassDEP's refusal to consult with the Nolumbeka Project Coalition is also a violation of the Environmental Justice Strategy issued by the Massachusetts Executive Office of Energy & Environmental Affairs in February 2024. Its Director of Environmental Justice, Deneen Simpson, ignored Nolumbeka's requests for cooperation and consultation as detailed in the following letter dated October 29, 2024 by Joseph Graveline, the Senior Advisor for the Nolumbeka Project Tribal Coalition.

The Nolumbeka Project Tribal Coalition is: The Elnu Abenaki tribe/Tribe of Vermont, the Chaubunagungamaug Band of Nipmuck Indians of Massachusetts, and The Nolumbeka Project. ...

At the October 10, 2024 public information meeting in Turners Falls Mass, Tim Jones, speaking on behalf of MassDEP, informed the public that Tribal concerns would not be taken into consideration in the issuing of the 401 WQC.

During the intermission, I inquired from Mr. Jones how it was he felt that MassDEP had no obligation to take Tribal concerns, Federal 106, 36 CFR 800 or the Advisory Council on Historic Preservation (ACHP) March 21, 2024 directives and guidelines into consideration with the MassDEP 401 WQC process.

Mr. Jones informed me that MassDEP's attorneys informed him they had no obligation to take into consideration Tribal Cultural and environmental resources into the 401 WQC process, and so they chose not to engage with our Tribal Coalition, or any other Tribal Peoples. (Emphasis added.)

There is a 2 mile dewatered stretch of the Connecticut River called the "Bypass Reach" directly below the Turners Falls Hydroelectric Project Dam that abuts a significant 10,000 year old indigenous village called Wissatinnewag. Wissatinnewag is located on the west side of the Connecticut River directly below the Turners Falls Dam.

The Nolumbeka Project has held a deed on 41 acres of the 63 acre National Register recognized Historical Site for over 20 years, with Mass Fish and Wildlife holding the remaining 22 acre deed.

We originally purchased the full 63 acre parcel in 1997 and transferred 22 acres to Mass Fish and Wildlife to hold as a Historical and Wildlife Refuge with the understanding that this was a significant and unique cultural resource and that they have an obligation to protect their part the land from public access, and as such the site is off-limits to the public, and has been for over 20 years. However, this does not protect this rare historical site from the effects of the utilities operational protocols, including for much of the year, the near full dewatering of a 2 mile stretch of a significant historical Navigable River of the United States, the Connecticut River.

Much looting of indigenous patrimony and ceremonial artifacts and other important historical items have been stolen from the land and this stretch of the Connecticut River due to the near total loss of natural river flows most of

the year. This dewatering protocol has left the riverbed and islands nearly completely dry and accessible to the public just by walking out on the dry river bed during these times of diverted water into the power canal. ...

It is my hope that we can connect with you personally to have a conversation around these challenges. We have been working diligently for well over a decade to hold a place in this relicensing process for meaningful dialogue to address the ongoing "cultural erasure" that is part and parcel with these kinds of State and Federal actions when they fail to take into considerations what tribal peoples loose when our voices are not heard and respected.

MassDEP's Office of Environmental Justice never responded to Mr. Graveline's letter. It continues to ignore his requests for environmental justice and in particular to prevent the cultural erasure of Indigenous ceremonial artefacts and other historic and cultural items located in the dry riverbed. This is an unavoidable consideration as it is a critical subject of the 401 WQC Process for the FirstLight Hydroelectric Relicensing Project.

In addition to the unlawful disregard by MassDEP's Office of Environmental Justice, MassDEP's Division of Wetlands and Waterways, the administrator of the certification process, has repeatedly refused to meet its responsibility and its obligations under Section 106 of the NHPA to consult with the Nolumbeka. The result is that MassDEP did not require that FirstLight increase minimum flows to protect sacred Indigenous cultural resources located in the riverbed, as well as the use of the Connecticut River for sacred Indigenous cultural practices.

As the administrator of the Section 401 process, MassDEP is the legally mandated authority for reviewing a federal project's ("the undertaking") impact on Indigenous historical and cultural sites, listed on the National Register of Historic Places. MassDEP is obligated to consult with the tribes, consultations that need to be based on the tribes' Indigenous Knowledge including their unique and reciprocal relationship with nature and with the Connecticut River specifically. In violation of Section 106, MassDEP has ignored the tribes' requests to conduct consultations, and instead of deferring to the tribes' Indigenous Knowledge, MassDEP has rejected all of the Nolembeka Project's knowledge regarding sites of cultural, religious and historical importance, as well as their arguments as to the adverse effects that the Facilities are causing to the river and its biodiversity.

C. The Draft WQC Fails to Consider the Interests of Indigenous Tribes Holding and Asserting Rights to CWA-Protected Aquatic and Aquatic-dependent resources

In addition to MassDEP's obligation to consult with the tribes through Section 106 to the HHPA, and through MassDEP's own Environmental Justice Strategy, "The U.S. Environmental Protection Agency (EPA) is finalizing revisions to the Clean Water Act (CWA) water quality standards (WQS) regulation to add requirements for states establishing WQS in waters where Tribes hold and assert rights to CWA-protected aquatic and aquatic-dependent resources reserved through treaties, statutes, or Executive orders."¹⁰

MassDEP's persistent refusal to consider Indigenous interests and to consult with

¹⁰<https://www.federalregister.gov/documents/2024/05/02/2024-09427/water-quality-standards-regulatory-revisions-to-protect-tribal-reserved-rights>

Nolumbeka is illegal. It is also in total contradiction of its policies and mission statement on its website:

MassDEP's mission is to protect and enhance the Commonwealth's natural resources - air, water, and land - to provide for the health, safety, and welfare of all people, and to ensure a clean and safe environment for future generations. In carrying out this mission MassDEP commits to address and advance environmental justice and equity for all people of the Commonwealth, to provide meaningful, inclusive opportunities for people to participate in agency decisions that affect their lives;¹¹

II. **MassDEP'S DRAFT WQC FAILS TO DEFER TO INDIGENOUS KNOWLEDGE**

A. **ACHP Policy Statement¹² on Indigenous Knowledge and Historic Preservation**

In March 2024 the Advisory Council on Historic Preservation (ACHP) issued a “Policy Statement on Indigenous Knowledge and Historic Preservation” that clarifies the obligations of federal agencies under the Section 106 process. The tribes’ values, beliefs, ideas, observations and practices including their kinship relationship with their natural surroundings, is considered “Indigenous Knowledge” and recognized as such by the ACHP Policy Statement:

Indian Tribes, Native Hawaiians, and other Indigenous Peoples are the original stewards of what is now known as the United States They have existed as part of their environments for countless generations and have accumulated extensive experiences with, information about, and knowledge of the natural and cultural environment. This knowledge, often referred to as “Indigenous Knowledge,” results from *a reciprocal relationship with their traditional territories* . . . [emphasis added].¹³

(See also the 2021 Handbook, defining “Indigenous knowledge” also as “traditional ecological knowledge”.¹⁴)

As a result of this interdependent relationship between people and place, sacred sites and historic properties, including properties of religious and cultural importance . . . exist throughout the United States These locations are often considered to be of great importance by the Indigenous People who ascribe meaning to them and are frequently associated with significant cultural events, important spiritual locations, or are an active part of their living culture.

Indian Tribes, Native Hawaiians, and other Indigenous Peoples frequently rely upon their Indigenous Knowledge to identify and interact with these locations. Sacred sites, historic properties, and properties of religious and cultural

¹¹ <https://www.mass.gov/orgs/massachusetts-department-of-environmental-protection>

¹² PolicyStatementonIndigenousKnowledgeandHistoricPreservation21March2024.pdf

¹³ Id.

¹⁴ CONSULTATION WITH INDIAN TRIBES IN THE SECTION 106 REVIEW PROCESS: THE HANDBOOK, June 2021, p.21.

importance are often imbued with both tangible and intangible values and resources that are not readily known outside of the community, clan, family, or individual who ascribe significance to them. ***Therefore, it is critical that federal agencies, state and local governments, and nongovernmental institutions, including private contractors, respect the value of and actively seek to incorporate Indigenous Knowledge into their historic preservation programs and decision making*** (emphasis added).¹⁵

The policy statement starkly demonstrates MassDEP's violations of Section 106 for non-compliance with consultation obligations with the tribes and lack of deference to Indigenous knowledge.

For purposes of Section 106, the term "Indigenous Knowledge" includes, but is not limited to, the experiences, insights, and knowledge held by Indian Tribes ... that can assist federal agencies in identifying, evaluating, assessing, and resolving adverse effects to historic properties that may be of religious and cultural significance to them. ... Deference can and should be provided to the expertise of designated representatives about Indigenous Knowledge that is provided to inform decision making in the Section 106 process. A reasonable and good faith effort includes the responsibility that federal agencies, consistent with 36 CFR § 800.2(c)(2)(ii)(A), consider Indigenous Knowledge in a successive and cumulative manner throughout the four-step Section 106 process.¹⁶

The four-step Section 106 process consists of "Identification and Documentation," "Evaluation," "Assessment of Adverse Effects," and "Resolution of Adverse Effects."¹⁷

Indigenous knowledge plays a critical and key role in this first step: "The development and implementation of identification efforts ... should be guided and informed by Indigenous Knowledge." The second step, "Evaluation:"

requires federal agencies to acknowledge the special expertise of Indian Tribes and NHOs in identifying and assessing the eligibility of historic properties that may be of religious and cultural significance to them. Acknowledgement in this . . . context means to recognize and defer to Tribal interpretation of the property's significance and integrity.¹⁸

As noted above, MassDEP did not conduct consultations with the tribes under Section 106. MassDEP denied the tribes' right to consultation and denied its responsibility or obligation to consult with them. By denying their right to consultation, MassDEP denied their indigenous knowledge regarding cultural and religious sites in the Connecticut River and rejected their arguments regarding adverse effects.

Regarding the third step, "Assessment of Adverse Effects:"

Indian Tribes are the authorities and experts about their respective cultures, lifeways, geographies, and histories. To understand if and how an undertaking

¹⁵ Id.

¹⁶ ACHP 2024 section 3.

¹⁷ Id. Section 3 a-d.

¹⁸ Id., section 3b.

may affect a historic property of religious and cultural significance to an Indian Tribe ... the federal agency must take into account, and should include in its assessment of how that property would be affected by the proposed undertaking, the Indigenous Knowledge and comments provided by the associated Indian Tribes.

As for the fourth step, “Resolution of Adverse Effects:”

Efforts taken to avoid or minimize adverse effects should reflect the Indigenous Knowledge and other comments provided by the Indian Tribe ... recognizing they are uniquely suited to inform those decisions and can provide information to help define what may be or may not be appropriate. When considering ways to resolve adverse effects to historic properties of religious and cultural significance to Indian Tribes ..., agencies should defer to the[ir] expertise

MassDEP rejected the tribes’ Indigenous Knowledge as to the adverse effects of the Facilities’ operations on the Connecticut River, erroneously claiming that MassDEP has no jurisdiction over indigenous consultations. As a result, MassDEP issued a draft WQC (dated January 24, 2025) that totally ignores the impact of the Facilities on indigenous cultural, religious and historical sites in and abutting the river, exposing these sites and the artifacts that they contain to ongoing looting, destruction, and obliteration. MassDEP ignored the tribes’ supplications to consult with them and defer to their Indigenous Knowledge and the result is an erroneous decision that must now be voided.

The tribes recognize the critical importance of the consultation process, refusing to sign the Recreation Agreement and the Fish and Flow Agreement in order not to endanger their status in the consultations:

We knew we could not sign the Recreational Settlement Agreement without severely limiting our ability to air our concerns on so many other levels of the project operations and processes now and into the future. The Recreation Settlement Agreement, and the Flows and Fish Settlement Agreement, we choose not to sign, would only have served to severely dilute and hobble the guarantees offered to us through the 36 CFR 800 Federal 106 process, and the directives contained in the Preamble, Scope, and Authority of the Advisory Council On Historic Preservation (ACHP) directives.

If MassDEP had fulfilled its legal mandate and responsibility under Section 106, consulted with the tribes and deferred to their indigenous knowledge, the Agency would have avoided its erroneous decision in the draft WQC that does not require FirstLight to increase water flows.¹⁹

B. Indigenous Knowledge, Rights of Nature and Earth Law

Earth Law seeks to align our contemporary legal systems with the laws of nature – or, to use the terminology employed by the framers of the Massachusetts Constitution, to align our laws with those that emanate from “the great Legislator of the universe.” Mass. Constitution, *Preamble*. ELP therefore submits these comments to share with MassDEP,

¹⁹ Nolumbeka Project to FERC, May 19, 2024, 17-18.

as well as all of the stakeholders in this relicensing process, a perspective on the merits of relicensing the Facilities based on Earth law.²⁰

The emergence of Earth law depends on reformative change within extant legal systems. These changes in human law are being catalyzed by the understanding of Earth's biochemical and geophysical laws.²¹ It would be an abdication of responsibility by MassDEP to fail to acknowledge:

- the pre-emptive supremacy of Earth's biochemical and geophysical laws.
- the fatal assumption that Earth has the capacity to support perpetual limitless growth.
- the retardation of legal and administrative agency decision-making systems by reliance on precedent (in this time of unprecedented planetary change)
- and the massive corruption of legal, economic, political, and financial systems based on these predicates.

The Indigenous Knowledge of the tribes includes their beliefs, values, ideas and insights as to their identification with nature as a living “person” through an interdependent kin relationship. A key and critical manifestation of this relationship is the recognition that nature has rights. Consultations between MassDEP and the tribes on their deep connection to nature specifically expressed here as rights of the Connecticut River, must be part of the exchange of ideas between MassDEP and the tribes under the Section 106 process, to support their efforts to protect their cultural, religious and historical sites from the impact of the Facilities on the Connecticut River.

The emerging body of Earth law shares the sound legal foundations based on the kinship between humans and nature that has been preserved by Indigenous tribes throughout the US, Canada and Latin America. Humans are not separate from nature but together comprise a living entity. Human wellbeing and the wellbeing of the species and ecosystems that comprise “Mother Earth” are interdependent. By extension, the health and wellbeing of the expansive communities of life enhanced by the Connecticut River are interdependent.

To understand the intertwining of the rights of nature and the rights of the Connecticut River, with the rights of the Indigenous tribes, we note that indigenous people have historically, extending throughout their 10,000 years and more habitation of the Americas, respected and revered nature as a fundamental moral value, as attested by their vast ecological knowledge and expertise, their culture and traditions, and their creation stories. Indigenous knowledge taught that their wellbeing was utterly dependent on the wellbeing of nature, and the relationship between them is reciprocal – humans are ethically obliged to give back to nature what they took from her.

The Connecticut River's exploitation as a resource has caused it egregious harm. Together with its ecosystems and biodiversity all of which need to function as an

²⁰ Earth law is “[t]he emerging body of law that protects, stabilizes, and restores the functional interdependency of Earth's life and life-support systems at the local, bioregional, and global levels. Earth law may be expressed in constitutional, statutory, common law, and customary law, as well as in treaties and other agreements both public and private.” Zelle, et al., *Earth Law: Emerging Ecocentric Law—A Guide for Practitioners*, Aspen Publishing (2020).

²¹ Stockholm Resilience Center Planetary Boundaries.

integrated and interdependent system of natural communities, the river possesses, at minimum, the following fundamental and inalienable rights:

- The right to maintain natural flow to maintain ecosystem health;
- The right to support essential functions within its ecosystems, including recharging groundwater, moving and depositing sediments, and providing adequate habitat for native plants and animals;
- The right to maintain native biodiversity;
- The right to restoration and preservation of adequate ecosystem health.

For the tribes, the Connecticut River is not a resource to be exploited but a living entity whose rights to exist, regenerate and thrive must be respected throughout the relicensing process, and whose kindness to them over thousands of years must be reciprocated. Yet despite raising this most fundamental albeit controversial belief, MassDEP refuses to discuss this idea or other elements of their indigenous knowledge with the tribes through consultation. The tribes' unique relationship to the Connecticut River is not a resource as conventionally defined by federal and state agencies "to be used at will, and without restraints to drive utilities profit margins. She's a living being and deserving of respect and protection."

Over the last 54 years, very little respect has been granted to this once vibrant and powerful work of nature. It is a Eurocentric mindset to consider any part of nature, our beloved Connecticut River included, a resource, to be taking from without giving back. Now, tonight, we are asking if something will be given back to the Connecticut River and the amazing landscape she flows through. ... the Connecticut River, and the natural environment associated with it should be given proper consideration for what has been lost in this once healthy ecology of our pre-industrial Connecticut River Valley. Can we write a new chapter to help heal and return this river to its' historical majestic place in the landscape of this vibrant River Valley? The Connecticut River has given much over the centuries, and asked little in return.²²

²² Nolumbeka Project to FERC, May 19, 2024, 15-16

The tribes' relationship to the Connecticut River, "living, being and deserving of respect and protection" is characteristic of other indigenous tribes world-wide. As noted by the tribes, "[m]oving water is a living spirit to Indigenous Peoples all over the world, with no exception here in the Connecticut River Valley."²³ Focusing on the United States,²⁴ "a growing number of Tribal Nations and Indigenous organizations have advanced and adopted laws and policies which recognize nature, including species and ecosystems and rivers in particular, as a living entity with inherent rights, including rights to exist, flourish, regenerate, and evolve. Sovereign Tribal Nations have recognized the Rights of Nature, including the [Yurok Tribe and Nez Perce Tribe](#) recognizing the rights of the Klamath and Snake Rivers, respectively. Over thirty-five countries have also embraced Rights of Nature either constitutionally, through legislation, or through the courts; for example, [Ecuador](#), [Mexico](#), [India](#), [Colombia](#), and [Panama](#) have all implemented Rights of Nature at various levels of local, regional, and national governments.

A growing movement of communities across the United States and abroad are speaking up on behalf of the Rights of Nature, and by doing so, helping to prevent further harm to Nature while also seeking to restore the ecosystems that humanity is a part of. There is a growing recognition that implementing the Rights of Nature is also essential to upholding human rights. The health, safety, and welfare of humans is inseparable from the health, safety and welfare of the Connecticut River.

A rights of nature approach provides an opportunity to address the root causes of the world's environmental crises – antiquated legal and economic systems which treat Nature as property subject to human exploitation. The current anthropocentric view of nature as property and commodities to be traded does not exist in Indigenous Indian culture and tradition. Nature is a relation to be revered and loved, not a tradable commodity to exploit. Throughout the MassDEP hearings sound scientific, legal and factual comments have been raised demonstrating the abhorrent failure of MassDEP to use its power and authority to protect the Connecticut River from the devastating impact of the Facilities. Reviewing current laws from the perspective of Earth Law and rights of nature can shed light on the drawbacks of this rigged certification process. The CWA was devised to guarantee protection for nature and to prevent polluting and destructive activities. The Massachusetts Constitution enshrines the people's right to the natural quality of the environment. Yet MassDEP has ignored these interests in its draft WQC and seems intent to pass the basin to FERC without a care for the interests of the Connecticut River herself or the vast community of interests articulated by stakeholders who oppose the relicensing of the Facilities.

C. United Nations Declaration on the Right of the Indigenous Peoples and Free, Prior and Informed Consent

The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)²⁵ is an internationally recognized human rights instrument. UNDRIP was drafted with the input of Indigenous peoples worldwide and is thus recognized as a universal policy guide on Indigenous rights and Indigenous Knowledge, and in particular - the FPIC principle: "free, prior, informed, consent" - governments are obligated to undertake consultations to

²³ *Id.*, 5.

²⁴ We express gratitude to Earth Law Center for open access to the extremely helpful templates of documents on Earth law and rights of nature in the ELC Earth Law Portal, <https://www.earthlawportal.org/indigenous-circle-laws>.

²⁵ <https://www.ohchr.org/en/indigenous-peoples/un-declaration-rights-indigenous-peoples>

reach the consent of Indigenous peoples before the adoption of legal or administrative policies, or programmes or projects that will impact them and the use of their lands or water.

Recognizing the significance of the Declaration in the context of Section 106 consultations, the ACHP has issued several policy papers on integrating UNDRIP with Section 106,²⁶ and calls on federal agencies and state and local governments to use UNDRIP as a reference guide during the consultation process and when considering Indigenous Knowledge.

ELP calls on MassDEP to refer to UNDRIP as policy guidance for consultations with the Indigenous Tribes during the certification process. And the Nolembeka Project should be recognized as the voice of the River.²⁷

III. THE MASSACHUSETTS CONSTITUTION PROHIBITS THE RELICENSING OF THE FACILITIES

Article 97 of the Massachusetts Constitution enshrines “the right to . . . the natural . . . qualities of the environment” as fundamental rights. Mass. Const. Art. 49, *as amended by* Art. 97 (“Article 97”). The status quo ante operations of the NMPS facility literally muddy the waters of the Connecticut River, generating an irregular ebb and flow of intake and sudden hot-water discharges that force both the river and debris to flow upstream. The effects of this discharge on the water column, Littoral Zone, Riparian Zone, and river temperatures have been thoroughly established by uncontested data. This unnatural cycle has degraded, and continues to degrade, water quality and the “natural, scenic, historic, and esthetic qualities” of the River, its indigenous²⁸ flora and fauna, and regional ecosystems. This ongoing abuse of the Connecticut River is an obvious, continuing violation of Article 97 rights. **It deprives the people of their right to the “natural qualities of the environment.”** While the precise definition of “natural qualities of the environment” might be discerned through an examination of the legislative history of the Amendment, no such precision is necessary to conclude that the operation of the Facilities violates the people’s right. The Facilities are not a natural occurrence of the historical evolution of the River. Water flowing upstream is not a “natural quality of the environment.” It is a perversion of the natural quality of the environment by FirstLight to extract the energy of the River for profit.

Previous attempts to vindicate Article 97 rights have failed because they challenged state action, resulting in a direct conflict between the personal rights of private citizens and the

²⁶ E.g., SECTION 106 AND THE U.N. DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES: INTERSECTIONS AND COMMON ISSUES: ARTICLE 18 AND SECTION 106 <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.achp.gov/sites/default/files/guidance/2018-06/Section106andtheUNDRIPIntersectionsandCommonIssuesArticle18andSection10622Nov2013.pdf>; SECTION 106 AND THE U.N. DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES: GENERAL INFORMATION AND GUIDANCE <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.achp.gov/sites/default/files/guidance/2018-07/Section106andtheUNDRIPGeneralInformationandGuidance.pdf>

²⁷ “Ko au te awa, ko te awa ko au” is a Māori proverb that translates to “I am the river, the river is me.” It is a traditional saying of the Whanganui iwi, or people, who consider the Whanganui River to be a living being that is indivisible from the land.

²⁸ One of the alarming aspects of the NMPS discharge is that the affected parts of the river have become breeding grounds for invasive species.

Commonwealth in its capacity as sovereign. *See, e.g., Chase v. Tr. for Pub. Land*, No. 329075(KCL), 2008 WL 642635, at *5 (Mass. Land Ct. Mar. 11, 2008) (private citizen, outside the context of a ten-taxpayer lawsuit, may not invoke Article 97 to obtain judicial review of a Department of Conservation & Recreation decision); *Enos v. Sec'y of Env't Affs.*, 432 Mass. 132, 142 & n.7 (2000) (Article 97 does not give private citizens the right to compel a state official to enforce the Massachusetts Environmental Protection Act).

Here, however, the conflict is between the people of the Commonwealth protected by the Constitution and a foreign company (FirstLight Power) that uses and degrades public resources (the Connecticut River and its watershed) to operate its for-profit Facilities with expired permits. Moreover, the issue here is not challenging a hypothetical decision: FirstLight, the Facilities, and NMPS in particular, are presently degrading the “natural, scenic, historic, esthetic qualities of their environment” and any relicensing will perpetuate the violation of the people’s right to a natural environment.

IV. REQUEST FOR EMERGENCY EXECUTION OF MassDEP’s POWERS TO HALT THE ONGOING DEGRADATION OF THE CONNECTICUT RIVER

In light of the above omissions and violations of Section 106 as well as non-compliance with ACHP’s policy statement, together with its Department of Environmental Justice’s abysmal role in ignoring Nolumbeka’s pleas for environmental justice and protection of its sacred sites, and the refusal of MassDEP generally to consider indigenous interests as described above, MassDEP must immediately halt the relicensing process until it initiates, conducts and completes Section 106 consultations with the tribes, deferring to their Indigenous Knowledge.

However, since MassDEP’s refusal to consult with the Nolumbeka regarding the Section 401 WQC has caused additional and irrevocable harm to the Connecticut River and to Nolumbeka’s cultural, religious and historical sites in and abutting the river, we request that MassDEP immediately attach emergency conditions to the current license under which FirstLight is operating. These conditions must be designed to eliminate, or at least mitigate, the ongoing and worsening ecological damage.

We call to mind the tribes’ vision of a meaningful role in the new relicensing process:

As licensing stakeholders since 2012, we understand that now after more than fifty four years, Indigenous voices and Indigenous knowledge are going to play a unique role in this new relicensing process, and will hold an important place in creating a meaningful space for Indigenous voices in all aspects of the potential adverse impacts to the land, waters and natural environment in the project APE and beyond now and well into the future.²⁹

AFTERWORD

On May 19, 1676, Captain William Turner - Turners Falls’ namesake - sent his garrison of soldiers onto an encampment of elders, women, and children gathered near the falls, killing them as they slept in the early morning hours. It was the practice that warriors would sleep separately from those less able to defend themselves. Afterall, how could another warrior send his brutality on the innocent? Turner’s actions defied this war ethic.

²⁹ Nolumbeka Project to FERC, May 19, 2024, p.18.

Over 300 native people were killed at the hands of Turner's 150 man army of English settlers. Turner's actions quickly fell upon him; the assault's commotion caused the nearby native warriors to flush the English settlers out, killing Turner in the chase.

In 2004, after centuries of genocide, eco-cultural erasure, and holistically applied socio-economic oppression, the town of Turners Falls "requested of the Medicine Man of the Naragansett a ceremony of spirit and healing and reconciliation."³⁰ Found in this agreement was a commitment to "deepen our appreciation for the rich heritage of the indigenous peoples of our region and all who have found respite, sanctuary, and welcome here."³¹ Twenty-one years later, we find ourselves faced with another test of words, of shared understandings, of commitments to progress through mutual aid and compassionate action. Amidst global ecological meltdown and political upheaval, we are asked to look very clearly at the predicament of re-permitting the Turners Falls dam. We must look at the waterway that flows quite beautifully, naturally, and innocently, and question the exclusion of local tribes from a bureaucratic regulatory process.

Prior to any massacre or dam construction in the territory known as Peskeompskut - in Nimpuk meaning "where the rock splits the river"³²- it was a gathering point for abundant fish harvests and an opportunity to renew kinship ties. Now, we return to Peskeompskut to decide whether reconciliation has an expiration date or if kinship ties can be renewed and strengthened. Without fresh water and air, healthy soil and crops, and co-habitation with our fellow humans and non-humans, everything falls apart. We know this because everything *is* falling apart. Can the deeply negative energy of massacre and endless energy of corporate desires be transformed into the kinship-strengthening generative energy of the democratic process? This remains to be seen.

We submit this letter as our public comments on MassDEP's draft WQC.

Respectfully submitted on behalf of the ConnecticutRiver,

EARTHLAWPRACTICE PC,

Tony Zelle
 Rachelle Adam
 Joseph O'Brien
 Jordan Michelson

³⁰ <https://nolumbekaproject.org/94-2/>

³¹ Id.

³² <https://nolumbekaproject.org/wp-content/uploads/2022/05/pp12-13-remembrance-resources-for-teachers.pdf>

2/21/2025

Commissioner Bonnie Heiple
 MA Department of Environmental Protection
 100 Cambridge Street, Suite 900
 Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
 FirstLight 401 WQC Comments

Dear Commissioner Heiple:

My business, Earthworks, is a small local employer based in Montague MA near Turners Falls. We offer this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has delivered significant benefits to Massachusetts communities through investments in accessible, year-long recreation offerings, local vendor contracts which have totaled nearly \$35 million since 2020, and as an employer of over 140 people in New England, including many important union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find.

The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates¹. FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in Burlington, MA, FirstLight employs over 140 people in New England, is a proud Union employer, and supports many more Massachusetts businesses through its operations year after year.

On top of that, FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed

¹ <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>

grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

Earthworks applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

Michael B Mazur, Owner

Earthworks

17 N. Leverett Rd

Montague, MA 01351

For FERC Filing:

2/19/2024

The Honorable Debbie-Anne Reese
 Acting Secretary
 Federal Energy Regulatory Commission
 888 First Street N.E.
 Washington, DC 20426

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
 FirstLight 401 WQC Comments

Dear Acting Secretary Reese:

My business, Earthworks, is a small local employer based in Montague, MA, home of the Turners Fall Project. Earthworks offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has delivered significant benefits to Massachusetts communities through investments in accessible, year-long recreation offerings, local vendor contracts which have totaled nearly \$35 million since 2020, and as an employer of over 140 people in New England, including many important union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find.

The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates². FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in Burlington, MA, FirstLight employs over 140 people in New England, is a

² <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>

proud Union employer, and supports many more Massachusetts businesses through its operations year after year.

On top of that, FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

Earthworks applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

Michael B Mazur, Owner
Earthworks
17 N. Leverett Rd
Montague, MA 01351



FirstLight
100 District Avenue, Suite 102
Burlington, MA 01803
Ph.: (781) 653-4489
Email: justin.trudell@firstlight.energy

Justin Trudell
President and CEO

February 24, 2025

Via Electronic Filing: <mailto:dep.hydro@mass.gov>

Commissioner Bonnie Heiple
Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Turners Falls Hydroelectric Project (FERC No. 1889), FirstLight MA Hydro LLC,
Northfield Mountain Pumped Storage Project (FERC No. 2485), Northfield Mountain LLC
Comments on Draft Section 401 Water Quality Certification

Dear Commissioner Heiple:

FirstLight MA Hydro LLC is the owner and operator of the Turners Falls Hydroelectric Project (Turners Falls Project, FERC No. 1889). Northfield Mountain LLC is the owner and operator of the Northfield Mountain Pumped Storage Project (Northfield Mountain Project, FERC No. 2485). The Turners Falls and Northfield Mountain Projects are collectively referred to as the Project or Projects. FirstLight Hydro LLC and Northfield Mountain LLC are collectively referred to as FirstLight. The Projects are currently undergoing relicensing proceedings with the Federal Energy Regulatory Commission (FERC).

On April 22, 2024, under Section 401(a)(1) of the Clean Water Act (33 USC § 1341(a)(1)), FirstLight filed with the Massachusetts Department of Environmental Protection (MassDEP) its 401 Water Quality Certificate (401 WQC) Applications for the Projects. Also on April 22, 2024, MassDEP filed a letter with FERC stating that the 401 WQC Application *meets the content requirements in 40 CFR § 121.5(a)(1) and the additional content requirements identified by MassDEP in accordance with 40 CFR § 121.5(c)*.

In the 10 months since FirstLight's filing of its 401 WQC Application, MassDEP facilitated a robust process involving multiple in person and virtual hearings, public information sessions and written comment periods to ensure stakeholder input was considered. On January 24, 2025, MassDEP issued its Draft 401 WQC for the Projects, setting a deadline of February 24, 2025, for the subsequent written comment period. Please find attached FirstLight's comments on the Draft 401 WQC. FirstLight appreciates MassDEP's commitment to producing a 401 WQC decision that considers the best available science and the perspectives of many stakeholders, including FirstLight.

If you have any questions regarding these comments, please contact me at the above telephone number.

Sincerely,

Justin Trudell
President and CEO

Attachment: FirstLight Comments to Draft 401 WQC

Introduction

FirstLight reviewed the Draft 401 Water Quality Certificate (Draft 401 WQC) issued on January 24, 2025, by the Massachusetts Department of Environmental Protection (MassDEP), and has included our comments throughout this document. FirstLight appreciates MassDEP's efforts to consider the best available science and substantial public comment to ensure the Draft 401 WQC reflects a complete review of all relevant data and information.

The Draft 401 WQC issued by MassDEP will further advance the shared goal of a thriving Connecticut River with enhanced aquatic habitat and accessible recreation by conditioning many of the significant benefits provided in the Flows and Fish Passage (FFP) and Recreation Settlement Agreements and adding new provisions in key areas including erosion, fish passage and invasive plants. It also includes a variety of constraints on the operation of the Northfield Mountain and Turners Falls Projects. These include requirements around passing a percentage of inflow, a reduced Turners Falls Impoundment (TFI) operating range, and more. While FirstLight believes Massachusetts Surface Water Quality Standards (SWQS) would be met without some of these conditions and constraints, FirstLight supports finalizing the Draft 401 WQC in its current form.

As has been underscored throughout this process, the necessity of FirstLight's Northfield Mountain and Turners Falls Projects to the community, state, and region today and in the decades ahead, cannot be overstated. While, outside the scope of the 401 WQC, it is undeniable that the Commonwealth's mandate to reduce greenhouse gas emissions 50% by 2030 and 100% by 2050 is fast approaching, and with new challenges arising for our clean energy future, operational clean energy is more valuable than ever before. The 67.71 MW Turners Falls Project is Massachusetts' largest conventional hydroelectric generating facility, producing over 300,000 zero carbon MWhs each year. FirstLight's 1,166.8 MW Northfield Mountain Project is the region's largest source of energy storage, capable of powering approximately 1.3 million homes for up to 7.5 hours each day. Northfield's ability to store 10,779 MWhs of energy under proposed operating conditions, its large capacity, long-duration, and ability to rapidly ramp up to full output in less than 10 minutes make it the most valuable tool the Independent System Operator-New England (ISO-NE) has to continuously maintain New England's electricity load and supply balance. Northfield's value to the grid includes being called on to prevent blackouts and keep the lights on during grid emergencies, shave peak-demand prices realizing cost reductions for ratepayers, supports the smooth integration of clean electricity onto the grid with its storage capabilities, and more. With New England electricity demand projected to at least double by 2050 and state mandates to decarbonize our electricity supply, these services will only grow more important in the decades ahead. The need is clear and FirstLight supports the issuance of a 401 WQC that is consistent with the Draft 401 WQC, preserving our ability to meet the clean energy and storage needs of the Commonwealth and the region.

Comments on Special Conditions

The bulk of the Special Conditions in the Draft 401 WQC are taken verbatim from the draft license articles included in the FFP Agreement referenced on p. 13 of the Draft 401 WQC. However, some Special Conditions in the Draft 401 WQC include additional requirements to the draft license articles from the FFP Agreement as described below. In addition, the Draft 401 WQC included new Special Conditions that were not part of the FFP Agreement, which are also discussed below.

Turners Falls Impoundment Water Level Management

Special Condition 10 (Pages 59-60): Turners Falls Impoundment Water Level Management (FFP Agreement Article A190). While the draft license article included in the FFP Agreement had a TFI operating range of 176 to 185 ft, Special Condition 10 limits the operating range from 178.5 to 185 ft, except for a certain number of discretionary events where FirstLight may lower the water level to 177.5 ft and for non-discretionary events where the water level may be lowered further, presumably to 176 feet.

While the Settlement Parties agreed to maintain the full TFI operating range (176 to 185 ft), FirstLight can support Special Condition 10 if the Final 401 WQC conditions are consistent with the Draft 401, including the number and duration of discretionary events. Under current operations, the Upper Reservoir is replenished through inflow, known as the naturally routed flow (NRF), and storage volume in the TFI between El. 176 ft and 185 ft. Inflow consists of discharge from the Vernon Project, the Ashuelot River, and the Millers River. Under current operations, if there is a shortage of water in the TFI to refill the Upper Reservoir, FirstLight can reduce generation at Cabot or Station No. 1 to store inflow. The draft license articles in the FFP Agreement incorporated into the Draft 401 WQC significantly restricts storing inflow. From May 1 to November 30, FirstLight must maintain a stabilized flow regime below Cabot Station, providing only $\pm 10\%$ of the NRF (see Special Condition 7, Proposed Article A160). Maintaining $\pm 10\%$ of the NRF was a central tenet for the federal and state agencies to maintain closer to run-of-river operations where inflow equals outflow. This restriction allows FirstLight to store only 10% of the inflow to refill the Upper Reservoir. Although 10% of the NRF can be stored, it represents a small volume of water. For instance, in September, the 50% exceedance flow at the Turners Falls Dam is 4,008 cfs, with 10% amounting to 401 cfs. To refill even half of the Upper Reservoir storage volume, at this rate, would take approximately 8 days. During drought conditions, it would take even longer. In summary, while having the ability to store 10% of the inflow is of some value, having the full operating range of the TFI is more critical to maintaining Northfield Mountain's ability to support grid reliability and the operations of Northfield Mountain broadly under proposed operating conditions.

The full TFI operating range was also sought to dampen the upstream Great River Hydro (GRH) Vernon Project peaking releases, which are permitted per the GRH agreement on its proposed operations in its Amended Final License Application¹. The federal and state signatories to the FFP Agreement requested that FirstLight dampen these peaking releases to better mimic naturally rising and falling flow.

FirstLight requests an additional non-discretionary event be added to Special Condition 10: "After the annual canal drawdown event which typically occurs in September, the TFI may fall below 178.5 ft to refill the canal promptly to allow for safe, timely, and effective downstream fish passage." FirstLight believes this non-discretionary event is necessary to allow fish passage downstream to resume in a timely manner and is consistent with state and federal agency priorities.

As noted above, FirstLight supports Special Condition 10 if the Final 401 WQC is consistent with the Draft 401 WQC, including the number and duration of discretionary events.

¹ See Attachment A "Great River Hydro's Proposed Alternative Operation for the Projects" of the Vernon Amended Final License Application: See Attachment A "Great River Hydro's Proposed Alternative Operation for the Projects" of the Vernon Amended Final License Application: Vernon Hydroelectric Project (FERC Project No. 1904-073) (greatriverhydro.com).

Barrier Net Schedule for Installation and Effectiveness Studies

Special Condition 20 (Pages 74-75): Fish Intake Protection and Consultation at Northfield Mountain (FFP Agreement Article B200). The FFP Agreement required that the barrier net be installed in the Northfield tailrace in Year 7. Special Condition 20 shortened that time period to 5 years. With this change, Special Condition 21 modified the timing for effectiveness studies such that the initial effectiveness studies will be conducted in Years 7-8 (see *Special Condition 21 (Page 75): Initial Intake Protection Effectiveness Testing and Fish Passage Performance Goals (FFP Agreement Article B21)*). Future effectiveness testing remains at Years 10-11 and Years 14-15 to align with the downstream effectiveness studies for the plunge pool, Station No. 1 and Cabot Station.

While the FFP Agreement with the federal and state agencies had the barrier net operational by Year 7, FirstLight expects it can expedite the design and implementation process to have the barrier net operational by Year 5; however, FirstLight would not support any further shortening of the implementation and effectiveness study schedule.

Flow Notification

Special Condition 12 (Pages 62-63): Flow Notification and Website (FFP Agreement Article A210). MassDEP added additional reporting requirements, specifically quarterly reports of daily impoundment fluctuations, other TFI water level statistics, and submitting an annual summary report. FirstLight agrees to provide this information.

Erosion Mitigation (New Special Condition)

Special Condition 25 (Page 77 and Appendix F) Erosion, Mitigation, Stabilization and Monitoring requires monitoring and erosion stabilization work to be conducted by FirstLight.

FirstLight hereby provides some additional context with respect to the erosion control measures implemented to date, and the findings of FirstLight’s Erosion Causation Study, both of which support draft Special Condition 25 as proposed in the Draft 401 WQC.

In 1998, MassDEP identified “Alteration in Stream-side or Littoral Vegetative Covers” as an impairment in the TFI from the Turners Falls Dam to the State line. The listed source of this impairment was “Streambank Modifications/Destabilization.” In 1999, FirstLight’s predecessor developed the Erosion Control Plan (ECP), identifying 20 eroded shoreline sites requiring stabilization. As discussed below, FirstLight (or its predecessors) have been addressing the 1998 impairment for 25+ years, during which time all sites previously identified as being the most severely eroded have been repaired and stabilized, regardless of the cause of erosion. It appears that the stabilization work conducted since the inception of the 1999 ECP was not included in MassDEP’s evaluation of post-1999 state water quality standard reviews to determine if an impairment still exists. As a result of over 25 years of exhaustive efforts by FirstLight (or its predecessors) to address the impairment, there are no major stabilization projects remaining within the TFI.² Given this, over the last 10 years FirstLight has shifted to a preventative maintenance approach at select sites identified during the 2013 Full River Reconnaissance (2013 FRR). As discussed below,

²Excluding sites immediately upstream of the Route 10 Bridge and immediately downstream of the Vernon Hydroelectric Project, which have been shown to have no nexus to the Turners Falls or Northfield Mountain Project operations.

FirstLight has completed all necessary repair or preventative maintenance projects as identified during the 2013 FRR.

25+ Years of Erosion Mitigation Efforts

FirstLight's (or its predecessor's) bank stabilization work throughout the TFI began in the early 1970s around the construction of the Northfield Mountain Project and resulted in the stabilization of over 5 miles of banks using rip-rap or rip-rap with vegetation, grading, and planting. An additional 2,000 feet of experimental stabilization was also constructed by the United States Army Corps of Engineers (USACE) in the 1970s.

Since 1999, informed by the ECP, FirstLight (or its predecessors) stabilized nearly 5 more miles of banks throughout the TFI, most of which were in Massachusetts. These projects have succeeded in meeting the objectives of the ECP by stabilizing eroding slopes, protecting adjacent property, and reducing sediment loading to the river as well as addressing the existing impairment. In 2013, FirstLight conducted the 2013 FRR to identify and define riverbank features and characteristics as well as the types, stages, indicators, and extent of erosion throughout the TFI. The 2013 FRR culminated in the identification of 10 TFI bank segments where stabilization or preventative maintenance projects would be conducted. Guided by the 2013 FRR, FirstLight has continued to address the impairment and completed the proposed stabilization/preventative maintenance work on the 10 bank segments identified during the study. Overall, FirstLight (or its predecessors) stabilized over 10.7 miles of TFI banks through construction of the Northfield Mountain Project, implementation of the ECP, execution of the 2013 FRR projects, and other efforts (e.g., USACE). Of the 10.7 miles previously stabilized, 10.5 miles are located within the Massachusetts portion of the TFI. The length of the TFI shoreline in Massachusetts is approximately 32.7 miles, thus approximately 32% of the TFI has already been stabilized.

Bank Stability Toe Erosion Model

FirstLight also conducted an exhaustive Erosion Causation Study, using the Bank Stability Toe Erosion Model (BSTEM) with leading experts vetted by all stakeholders, including MassDEP. The study included the collection of site-specific information at numerous transects in the TFI including geotechnical information (bore hole shear test, angle of internal friction, pore-water pressure, bulk unit weight) and conducting submerged jet tests to determine the critical shear stress and erodibility of bank materials. In addition, 15 years of transect data were available, boat wave data was collected, and land-based assessments were conducted. Based on the study, it was determined that Project operations were not a dominant cause of erosion in the TFI but a contributing³ cause in some areas. The overwhelming cause of streambank erosion was found to be high river flows. The USACE also conducted a study in 1979; and they too concluded that the primary cause of erosion is high flows.

FirstLight has already stabilized 32% of the TFI shoreline in Massachusetts regardless of cause, and the BSTEM modeling and USACE report both conclude that the major cause of shoreline erosion is high flows and not Project operations. While the leading science shows that Project operations are not the dominant cause of erosion in the TFI shoreline, FirstLight can support Special Condition 25 provided there are no further obligations related to erosion placed on FirstLight in the Final 401 WQC.

Water Quality Monitoring (New Special Condition)

³ For a cause to be considered contributing, it had to contribute to >5%, but <50%, of the erosion at a given site. For a cause to be considered dominant, it needed to have been responsible for at least 50% of the erosion at a given site.

Special Condition 26 (Page 77-79): Water Quality Monitoring requires FirstLight to conduct water quality monitoring at four locations (in the TFI at the Route 10 Bridge, Northfield Mountain tailrace, Barton Cove and in the riverine area below Cabot Station). The sampling at each location varies slightly but could include dissolved oxygen (DO), temperature, total phosphorus, chlorophyll-a, total suspended solids and turbidity. Sampling is required from June-September and a report is due on March 1 for the previous year's sampling.

FirstLight would not oppose this condition if the Final 401 WQC is the same as the Draft 401 WQC, though it disagrees that water quality monitoring is needed to maintain or achieve SWQS. There is no existing chemical water quality impairment, and therefore there is no reason to require post-license chemical monitoring.

FirstLight developed a water quality study plan in consultation with and supported by relicensing stakeholders, including MassDEP. As described in the Water Quality Study Report (Study No. 3.2.1), the following data was collected as part of the water quality study conducted in 2015:

- Continuous DO and temperature monitoring at 16 locations in the Project area including the TFI, bypass reach, power canal and the Connecticut River below Cabot Station. Monitoring started in April/May and extended through October/November.
- DO and temperature profiles were obtained bi-weekly at three locations in the TFI from May through November.

DO results from within the TFI, the bypass reach, the power canal, and below Cabot Station remained above the state water quality standard of 5.0 mg/L minimum for Class B warm water fisheries. The minimum observed DO concentration was 5.8 mg/L (and 71.1% saturation) at Site 11 below Cabot Station. The water temperatures observed at each location remained below the water quality standard of 28.3°C for Class B warm water fisheries. The maximum instantaneous temperatures observed across all sites ranged from 26.4 °C to 28.1°C.

Post license monitoring is not warranted given the following:

- MassDEP is requesting monitoring of DO and temperature in the TFI and below the Turners Falls Dam. The Project already meets state water quality standards relative to DO and temperature. FirstLight agreed to maintain a stabilized flow regime below Cabot Station and has agreed to considerably higher bypass flows thus it can be reasonably expected that DO concentrations below the dam will increase while temperatures will remain at or below those measured previously.

MassDEP is requesting monitoring of total phosphorus (TP) and chlorophyll-a at various locations in the TFI. There is no nexus between the Project, or its operations, on TP or chlorophyll-a. Even if FirstLight were to collect this data, it is unclear what criteria the results for TP and chlorophyll-a would be compared to, and what, if any, action would be required of FirstLight to reduce concentrations, given that FirstLight has no responsibility for the addition of nutrients to the Connecticut River.

- MassDEP is requesting the monitoring of total suspended solids (TSS) and turbidity in the TFI in the Northfield tailrace and below Cabot Station. Regarding TSS and turbidity, FirstLight conducted Study 3.1.3. Sediment Management Plan. As part of that study, FirstLight collected continuous

suspended sediment concentration (SSC) from 2013-2015 at three locations within the TFI, including the Route 10 Bridge and two locations in the Northfield tailrace. Grab samples were also collected to measure SSC and TSS. That study demonstrated that there is a clear correlation between SSC and flow, with SSC increasing under higher flows. Based on the relationship already established, one could estimate the SSC in the TFI under various flow conditions. It is unclear what criteria the results would be compared to, and what, if any action would be required of FirstLight.

Invasive Aquatic Plant Species Management Plan (New Special Condition)

Special Condition 27 (Page 79): Invasive Species Management Plan requires FirstLight to conduct annual surveys and control measures for invasive plants within Barton Cove.

In its Amended Final License Application, FirstLight included an Invasive Aquatic Plant Species Management Plan for the Turners Falls and Northfield Mountain Projects. Special Condition 27 requires FirstLight to allocate \$50,000 in Year 1 and \$10,000/year thereafter (subject to the US Consumer Price Index) throughout the license term to treat invasive plants in Barton Cove.

While FirstLight does not oppose this condition, assuming the Final 401 WQC is the same as the Draft 401 WQC, it notes for the record that the original sources or introduction of invasive aquatic plants in Barton Cove and elsewhere in the TFI are unknown. However, they were likely introduced by boats, motors, trailers, fishing gear, wildlife, or other sources. Also note that Australis Aquaculture, LLC has a National Pollutant Discharge Elimination System (NPDES) permit (No. MA0110264) to discharge up to 0.3 million gallons per day (MGD) of fish production process waste into the TFI near the Turners Falls Rod and Gun Club, located just upstream of Barton Cove. While the effluent is treated, it could accelerate invasive plant growth in Barton Cove.

The existence of the Project, or its operation, does not contribute to the introduction of invasive aquatic plants. Invasive plant seed sources will continue to flow into the TFI from the Connecticut River and tributaries, including from areas upstream of the Project. It is FirstLight's understanding that there is no boat cleaning equipment and no weed watchers or personnel inspecting boats entering or exiting the Gill and Pauchaug Boat Launches. The Gill Boat Launch is owned by the Massachusetts Department of Conservation and Recreation and the Pauchaug Boat Launch is owned by the Massachusetts Division of Fisheries and Wildlife. Thus, boats entering or exiting these boat launches will continue to introduce invasives to the TFI should they contain invasive plants.

Additional Comments on Draft 401 WQC

General Comment: In the numbered Special Conditions that were part of the FFP Agreement, there is a parenthetical in the title such as (Proposed Article A120). Where MassDEP amended the proposed Article the parenthetical reads, for example, (Proposed Article A190, as amended). For consistency, the parenthetical for condition B200 should be changed from (Proposed Condition B200) to (Proposed Article B200, as amended).

Other Comments

Page 1 (under Applicants): The official Applicant names do not include a comma. The correct applicant names are FirstLight MA Hydro LLC and Northfield Mountain LLC.

Page 3 (Paragraph 2). The first sentence under Section B references the owner of the Turners Falls Project as “FirstLight MA Hydro LLC (FirstLight).” We suggest deleting the parenthetical “FirstLight” because “FirstLight” is defined later in the paragraph as FirstLight Hydro LLC and Northfield Mountain LLC.

Page 3 (Paragraph 4): This section notes that FirstLight filed the 401 Application with MassDEP on April 22, 2024. FirstLight suggests that a sentence be added to indicate that on April 22, 2024, MassDEP filed a letter with the Federal Energy Regulatory Commission (FERC) stating that the application was complete.

Page 4 (Paragraph 3): This paragraph states that the 16 dams on the Connecticut River are “mostly” utility owned. We suggest that this language be changed to “There are 16 dams, most of which are used to generate electric power....”. FirstLight is an independent power producer; it is not regulated as a utility. FirstLight further believes that Great River Hydro, which owns many of the dams on the Connecticut River, is similarly not regulated as a “utility.”

Page 4 (Paragraph 5): The Draft 401 WQC states that the authorized installed capacity of Turners Falls is 64.21 megawatts (MW), which is incorrect. The Turners Falls Project has an authorized capacity of 67.709 MW, which includes Cabot (62.016 MW) and Station No. 1 (5.693 MW).

Page 14 (B. Prior Federal and State Participation): While the text discusses the various filings after the Ready for Environmental Assessment Notice was issued, it should be noted that MassDEP participated in the relicensing effort from 2013, including the scoping and commenting on studies.

Page 16 (Paragraph 2): The Draft 401 WQC states that FirstLight pumps water back downhill from the Upper Reservoir to the TFI to generate electricity. FirstLight suggests this sentence be clarified in the final WQC to indicate that rather than being “pumped,” water flows through the turbines because of the head.

Page 16 (Paragraph 2, footnote 8). This footnote states “*Typically, pumped storage operations have a closed loop system instead of an open loop system like the Northfield system, which relies upon a 20 mile segment of the Connecticut River for withdrawal and discharge*”. This statement is inaccurate. Based on FERC’s website ([Licensing | Federal Energy Regulatory Commission](#)) there are 26 pump-storage projects licensed by the FERC in the United States, the majority of which, are open loop systems like Northfield Mountain. FirstLight suggests that this footnote be deleted in the final WQC.

Page 16 (Paragraph 3): The Draft 401 WQC states that slow-moving or still-water reservoirs can heat up, resulting in abnormal temperature fluctuations which can affect sensitive species. While that may be the case on some reservoirs, it does not apply to the TFI. Based on the water quality study conducted as part of the licensing there is no evidence that the TFI is warming the Connecticut River as the water temperature profiles taken bi-weekly at three locations in the TFI from April to November showed an average difference between the top and bottom of the water column of 0.1-0.3°C. Please refer also to FirstLight’s submission on February 21, 2025, to MassDEP addressing alleged temperature changes in the TFI due to Northfield Mountain generation flows. For these reasons FirstLight suggests that this paragraph be deleted from the Final 401 WQC.

Page 17 (Table 2): The reference to Footnote “A” in Table 2 does not have a corresponding footnote. That footnote should be identical to footnote 4 on Page 52 of the Draft 401 WQC, which reads:

The amount of flow needed from Station No. 1 from June 1 to June 30 may be modified in the future pending fish passage effectiveness studies. If the Licensee conducts fish passage effectiveness studies, in consultation with the MDFW, NMFS, and USFWS and determines that migratory fish are not delayed by passing a greater percentage of the Total Minimum Bypass Flow below Station No. 1 via Station No. 1 discharge, the Licensee may file for a license amendment to increase the magnitude of Station No. 1 discharge upon written concurrence of MDFW, NMFS, and USFWS. Prior to filing for a license amendment with the Commission, the Licensee shall consult MassDEP, American Whitewater (AW), Appalachian Mountain Club (AMC), Crabapple Whitewater, Inc. (CAW), New England Flow (NE FLOW), and Zoar Outdoor (ZO) and address any comments of those entities in the license amendment filing.

Page 18 (5th bullet): The Draft 401 WQC states that there will be significant improvements in aquatic life habitat from Cabot Station to Holyoke Dam, “approximately 10 miles downstream”. The distance between Cabot Station and Holyoke Dam is approximately 35 miles.

Page 22 (Paragraph 2): This paragraph refers to confidential settlement discussions. References to those discussions should be deleted from the Final 401 WQC. The sentence referencing the settlement communications could be replaced with: “In consideration of other species, recreational, and tribal interests, MassWildlife agrees to flows of 500 cfs below Turners Falls Dam... ”

Page 27 (Paragraph 6): The Draft 401 WQC states using the full range of 176-179 without limitation would *decrease flows* in the TFI. It is unclear how using TFI operations between 176 and 179 would decrease flows in the TFI. There would be no decrease in flows through the TFI.

Page 28 (Paragraph 2): Firstlight does not believe footnote 27 applies to this paragraph.

Page 33 (Paragraph 4): This paragraph discusses the synopsis of eDNA work conducted by the Connecticut River Conservancy (CRC). CRC filed its eDNA synopsis with FERC on December 20, 2024. The submission contained no detailed discussion about the protocols and procedures, including sample site depth and velocity data and decontamination procedures. Therefore, it is not possible to assess the scientific basis for the conclusions made in the CRC filing. This section does not mention the eDNA study conducted by FirstLight and filed with FERC on November 8, 2018. That study concluded that no Shortnose Sturgeon eDNA was found in the TFI. FirstLight suggests that appropriate limitations be added to the discussion of the eDNA findings in this paragraph.

Page 33 (Paragraph 5) and Page 35 (Paragraph 5): On Page 33, the Draft 401 WQC states that MassDEP spoke with MassWildlife and NMFS regarding Shortnose Sturgeon passage and that MassWildlife opined that FirstLight’s proposed operations would support Shortnose Sturgeon passage. Note that FirstLight and NMFS met several times to review the Draft Biological Assessment (Draft BA) for Shortnose Sturgeon. After finalizing the Revised Draft BA with NMFS, it was filed with FERC on March 22, 2024. The Revised Draft BA included a Shortnose Sturgeon Draft Handling Plan. In that plan, any Shortnose Sturgeon collected in the proposed Spillway Lift are to be returned to the Connecticut River below the Turners Falls Dam.

On Page 35 the Draft 401 WQC states that there could be substantial gain for the Shortnose Sturgeon population by opening miles of previously blocked habitat through upstream passage at Turners Falls Dam. As stated in the Vermont Department of Environmental Conservation Draft 401 Water Quality Certificate

for the Vernon Project (page 71 of 108): “*The historic range of the population in the Connecticut River was widely accepted by researchers and managers to be from the mouth of the river at Long Island Sound to Great Falls, whether the Turners Falls Dam was built in 1905, as the falls were believed to be a natural upstream migration barrier.*” The natural barrier, coupled with NMFS’ agreed-upon protocol of returning any Shortnose Sturgeon caught in the proposed Spillway Lift to be returned below the Turners Falls Dam, suggests that NMFS is not seeking to establish a population above the dam.

Page 35 (Paragraph 2): The Draft 401 WQC states that the downstream rack spacing at Cabot is 2-inch, which is incorrect. It is 1-inch clear spacing (see Draft Article A300. Fish Passage Facilities and Consultation).

Page 35 (Paragraph 3): The Draft 401 WQC states that the Station No. 1 rack “must be modified if necessary”. The rack is properly designed per US Fish and Wildlife Service (USFWS) guidelines and FirstLight does not see a basis for this statement.

Page 39 (Paragraph 3): The Draft 401 WQC states that linking water level fluctuations to erosional processes has been demonstrated in numerous studies and that the “potential contribution to existing erosion rates in some locations was an increase 28 to 30% following hydropower operation simulations”. A citation was provided of a single study of the Baskatong Reservoir in Quebec. The Baskatong Reservoir and TFI are not comparable. The surface area of Baskatong Reservoir is 102,054 acres, whereas the surface area of the TFI is 2,110 acres (48 times smaller). The fetch⁴ of Baskatong Reservoir is over 7 miles, compared to roughly 700 feet at the TFI. Citing this study and the 28-30% following hydropower operations is inappropriate. First, the dam impounding the Baskatong Reservoir was constructed in 1927, the referenced citation was from 2001, and hydropower facility was added in 2007. Thus the 28-30% estimates are speculative as the hydropower facility was not operational at the time of study. Second, the abstract states that “Wave action is the main factor responsible for bank erosion, especially in areas highly exposed by the longest fetches.” This is not surprising given the 7-mile fetch of the Baskatong Reservoir; again, hugely different from the TFI. The Baskatong Reservoir is not remotely comparable to the TFI and thus the conclusions are not relevant to this Project.

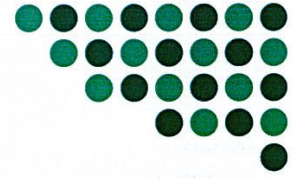
Paragraph 3 also notes that other research shows that the level or range of fluctuations contributes to how long it takes for the impoundment to stabilize following dam construction as assessed through various geomorphological processes and cites footnote 50. The citation is based on a study of the Bratsk Reservoir in Russia, which is the largest reservoir in the world relative to volume (137,821,227 acre-feet) and is one of the largest in terms of area (1,359,074 acres, or 2,123 square miles). It states that reservoir fluctuations range from 4 to 22 feet per year and up to 33 feet per decade. The Bratsk Reservoir is more than 600 times larger than the TFI and therefore the conclusions are not relevant to this Project.

Page 49 (Special Condition 1): This condition pertains to upgrades for remote operation of Station No. 1. It is unclear why this condition is incorporated in the Draft 401 WQC as it is unrelated to water quality.

Page 59 (Special Condition 10): This condition allows FirstLight to reduce the water level below 178.5 ft for Non-Discretionary events and lists seven conditions when this applicable. However, the condition does not include a lower floor for the non-discretionary events. FirstLight recommends that language be added

⁴ Fetch is the distance traveled by wind or waves across open water.

indicating the lower floor is elevation 176 ft, consistent with the lower floor under the existing and proposed FERC License.



February 19, 2025

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085 FirstLight
401 WQC Comments

Dear Commissioner Heiple:

The Franklin County Chamber of Commerce & Regional Tourism Council offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has delivered significant benefits to Massachusetts communities through investments in accessible, year-long recreation offerings, local vendor contracts which have totaled nearly \$35 million since 2020, and as an employer of over 140 people in New England, including many important union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find.

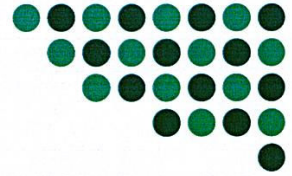
The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates¹. FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in Burlington, MA, FirstLight employs over 140 people in New England, is a proud Union employer, and supports many more Massachusetts businesses through its operations year after year.

On top of that, FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater

¹ <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>

**The
Franklin
County Chamber**
MASSACHUSETTS

79 Old Main Street
P.O. Box 6
Deerfield, MA 01342
413-773-5463
franklincc.org



role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

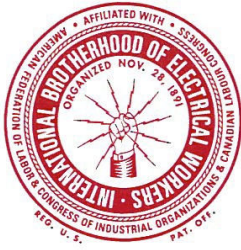
The Franklin County Chamber of Commerce & Regional Tourism Council applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

Jessye Deane
Executive Director
Franklin County Chamber of Commerce & Regional Tourism Council

**The
Franklin
County Chamber**
MASSACHUSETTS

79 Old Main Street
P.O. Box 6
Deerfield, MA 01342
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JOHN J. BEAUDOIN
BUSINESS MANAGER/FINANCIAL SECRETARY

International Brotherhood of Electrical Workers

Local 455
474 Page Boulevard
Springfield, MA 01104
Telephone (413) 733-7398



DANIEL G. HAMEL, JR.
PRESIDENT

MassDEP Filing:

February 10, 2025

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
FirstLight 401 WQC Comments

Dear Commissioner Heiple:

International Brotherhood of Electrical Workers (IBEW) Local Union 455 offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while allowing FirstLight to continue to generate needed clean electricity, an effort that demands union jobs. IBEW local Union 455 has counted FirstLight as a valued partner for years, providing important union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find. These facilities provide significant economic and recreation benefits to the local communities, in addition to rewarding, long-term work opportunities that align with the state's climate goals.

The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates¹. FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in Burlington, MA, FirstLight employs over 140 people in Massachusetts, and is a proud Union employer.

FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

IBEW Local Union 455 applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, enables the Projects' role in the region's clean energy future, and protects the many important union jobs the Projects support.

Sincerely,



John J. Beaudoin

Business Manager/Financial Secretary

IBEW Local Union 455

¹ <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>

From: [Elizabeth Davis](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WWC
Sent: 2/24/2025 8:44:41 AM

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24 February 2025

Massachusetts Department of Environmental Protection
 Draft Water Quality Certification First Light 401 WQC
 FERC License No. 1889 (Turners Falls), 2485 (Northfield Mountain)

Major goal - Thank you for the opportunity to respond to DEP's recently issued Water Quality Certification for the relicensing of the above-named projects. From a prior study of Connecticut River issues, the League's resulting position statement concludes that the League supports "the management and development of natural resources so as to enhance and protect the unique character of the Connecticut River Basin and to protect, maintain or restore its function as a green belt."

Aquatic species - Key features of those natural resources are fisheries and fish migrations up and down the river. Dams on the Connecticut River have been major impediments to historically large fish runs. The newer pumped storage facility has inadequately screened turbines that cause extensive fish kills. DEP's WQC recognizes these issues but does not provide for greatly improved screens and allows far too long a time to install any improved screens. Every effort should be made for the prevention of extensive fish kills. Those efforts should include improved fish ladders and the installation of more fish lifts. The goal here should be to achieve safer and larger numbers of fish up and down the river. Again, the time factors given in the WQC should be significantly shortened.

Erosion of riverbanks - Another issue adversely affecting the natural resources of the river is the continuing major erosion of the riverbanks caused by huge releases of fast-moving water from the pumped storage facility. These releases wipe out large numbers of the river's aquatic species and undermine and destroy desirable habitat for those species. Widely fluctuating water levels and volumes of water that are released from the dam and pumped storage facility contribute to erosion of the riverbanks. This undermines the natural vegetation that is essential for stable banks and sustainable wildlife habitat. In order to achieve desirable levels of fluctuation and volume, their recommended flow levels in the WQC should be significantly changed in order to achieve more desirable levels for species and riverbanks.

Climate change - Climate change is causing significant changes in the Connecticut River watershed. More changes are expected along with warming temperatures for air and water, increased frequency of extreme weather events, species extinction and increased flooding. In light of such increased and rapid changes, a 40–50-year review is short-sighted and unreasonable. A 25–30-year review would be more appropriate given the severity of these changes.

Sincerely,

Elizabeth Davis, Chair of Connecticut River Committee
League of Women Voters, Amherst, MA



February 14, 2024

The Honorable Debbie-Anne Reese
Acting Secretary
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, DC 20426

Re: Applications for Relicensing of FirstLight MA Hydro LLC for Turners Falls Hydroelectric Project (FERC No. P-1889) ("Turners Falls") and Northfield Mountain LLC for Northfield Mountain Pumped Storage Project (FERC No. P-2485) ("Northfield Mountain")

Dear Acting Secretary Reese:

I am writing on behalf of the Massachusetts Business Roundtable to respectfully offer this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while allowing FirstLight to continue to generate needed clean energy, provide good-paying jobs, and deliver economic benefits to local communities.

The Roundtable is an organization comprised of senior business leaders from a variety of industries across the Commonwealth working on state public policy in pursuit of our mission of making Massachusetts a highly-desirable place to do business in a global economy. To do so, we focus our policy work primarily on issues relative to workforce development and addressing the state's high cost of living and doing business.

FirstLight has been a valued partner for years, providing important, family-sustaining jobs in areas of Western Massachusetts where they can be difficult to find. Additionally, FirstLight's facilities provide significant economic and recreation benefits

to the local communities, as well as rewarding, long-term work opportunities that align with the state's climate goals.

The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates¹. Much of the Roundtable's policy work seeks to address talent gaps in a variety of industries, such as clean energy. To its credit, FirstLight provides those job opportunities today, and is active in these workforce development efforts to build the workforce of the future.

FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. The Roundtable respectfully urges the Commission to consider the significant value of FirstLight's Projects to the region's clean energy future, the state's competitiveness and the long term impact on the state's economy.

Sincerely,

A handwritten signature in black ink, appearing to read "JD Chesloff". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

JD Chesloff
President & CEO

cc: Commissioner Bonnie Heiple, Massachusetts Department of Environmental Protection

¹ <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>

MassDEP Filing:

2/19/25

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
FirstLight 401 WQC Comments

Dear Commissioner Heiple:

Montague Machine Company offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has been a valued partner for Massachusetts businesses, with local vendor contracts totaling nearly \$35 million since 2020. In addition, FirstLight enhances Western Massachusetts communities by providing accessible, year-long recreation offerings, as an employer of over 140 people in New England, including many important union and non-union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find, and as a major taxpayer in Gill, Montague, Northfield and Erving.

Montague Machine Company applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

Ryan Johnston

Vice President

Montague Machine Company

FERC Filing:

2/19/25

The Honorable Debbie-Anne Reese

Acting Secretary

Federal Energy Regulatory Commission

888 First Street N.E.

Washington, DC 20426

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
FirstLight 401 WQC Comments

Dear Acting Secretary Reese:

Montague Machine Company offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has been a valued partner for Massachusetts businesses, with local vendor contracts totaling nearly \$35 million since 2020. In addition, FirstLight enhances Western Massachusetts communities by providing accessible, year-long recreation offerings, as an employer of over 140 people in New England, including many important union and non-union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find, and as a major taxpayer in Gill, Montague, Northfield and Erving.

Montague Machine Company applauds MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

Ryan Johnston

Vice President

Montague Machine Company



The National Hydropower Association, Inc.

200 Massachusetts Ave NW, Suite 320, Washington, DC 20001 • 202.805.5057 • www.hydro.org

February 7, 2025

Commissioner Bonnie Heiple
MA Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085 FirstLight 401 WQC Comments

Dear Commissioner Heiple:

The National Hydropower Association (NHA) offers this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations. Together, the Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. Looking ahead as renewables make up a growing portion of our grid mix, Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid, thanks to its ability to capture over 1,100MW of power generated during off-peak hours and dispatch it during times of high demand when it is needed most while simultaneously offsetting the dirtiest emissions generated by fossil-fuel powered generators.

Mid and long-duration energy storage is a critical component of enabling a clean energy transition. Pumped-hydro energy storage like Northfield Mountain is currently the only widely-commercialized source of long-duration energy storage and, [as of 2023, represented 96% of all utility-scale energy storage in the U.S.](#) As Massachusetts looks to incorporate significant amounts of renewable energy into the grid by 2050, including approximately 24 GW of offshore wind per the [Clean Energy and Climate Plan for 2050](#), there will be an increasing need for utility-scale energy storage and generation assets that can be rapidly deployed to balance the electric grid when the wind isn't blowing and the sun isn't shining. Not only can pumped-hydro resources like Northfield Mountain provide balance, they reduce carbon emissions by displacing more carbon-intensive fossil generators, they can provide relief to ratepayers by generating during times of high demand when prices are highest, known as peak price shaving, and they also reduce reliance on fossil-fuel powered peaker plants during winter months, both offsetting carbon emissions and improving the security of our energy system which is heavily reliant on imported fossil fuels.



The National Hydropower Association, Inc.

200 Massachusetts Ave NW, Suite 320, Washington, DC 20001 • 202.805.5057 • www.hydro.org

As the energy transition advances, we know that intermittent renewables will grow to dominate our grid mix, and electricity demand will likely at least double as systems shift from fossil-powered to electricity-powered. We must double down in support of the existing clean electricity generation and storage assets like FirstLight's Projects that can be called on today and will continue to provide significant value to the region in the transformative decades ahead. We applaud MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that both supports a healthy Connecticut River, the continued operations of FirstLight's Northfield Mountain and Turners Falls Projects, and, therefore, the Commonwealth's clean energy future.

Sincerely,

A handwritten signature in dark ink, appearing to read "MP", is written over a light gray, semi-transparent rectangular background.

Michael Purdie
Director of Regulatory Affairs and Markets
National Hydropower Association
200 Massachusetts Ave NW, Suite 320
Washington, D.C. 20001
michael@hydro.org

From: [Joseph Graveline](#)
To: [DEP Hydro \(DEP\)](#)
Subject: Comments of FirstLight's 401 Draft Water Quality Certificate
Attachments: [Comment NHESP 20923 Jessi L II..pdf](#); [MADEP401WQC22425Comment.pdf](#);
Sent: 2/24/2025 3:51:34 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system.
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Dear Ms. Stefanik and MassDEP Team,

Please accept the Nolumbeka Project Tribal Coalition's Comments on the FirstLight's Project No. 1889-085 and Project's No. 2485-071 MassDEP 401 WQC Draft.

Included in this email are attachments on the Draft 401 WQC comments, and a copy of the February 9, 2023 Jesse Leddick (NHESP) comments and history on the Wissatinnewag Property as mentioned in today's letter of comments attached to this email.

Wliwni- Thank you (Abenaki)

Joseph Graveline oldgraywolf@verizon.net (413) 657-6020 for contact by phone.

February 24, 2025

Elizabeth Stefanik, MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114

Subject: FirstLight 401 WQC for the
Turners Falls Project 1889 and the Northfield
Mountain Project 2485

Comments on FirstLight's 401 Draft Water Quality Certificate

Sent electronically via email to dep.hydro@mass.gov

Dear Ms. Stefanik and the MassDEP team,

The Nolumbeka Project Tribal Coalition is submitting this letter of *comments* and *protest* to the draft issue of the January 24, 2025 Water Quality Certification with conditions for the FirstLight Hydroelectric Project's listed above.

Who are the Nolumbeka Project Tribal Coalition

The Nolumbeka Project Coalition is: The Nolumbeka Project a 501c3 indigenous cultural preservation and educational NGO and major land owner located in the Bypass Reach of the project APE, the Elnu Abenaki Tribe, and the Chaubunagungamaug Band of Nipumck Indians.

Our Coalition has worked together for over a decade on the National Park Service's Advisory Council on the attack and Battle of the Great Falls May 19, 1676.

We have collectively brought together a significant body of historical research to be made available to scholars all over the world to study and become more informed about the conflict known as King Phillips War, and in Indigenous circles aka as The Second Puritan War of Conquest. We have been active Stakeholders in the relicensing since early 2012.

The Nolumbeka Project is the landholder of 41 acres of the 63 acre NRHP property 19-FR-12 (Wissatinnewag), located directly below the Turners Falls Hydro Dam on the Connecticut River. The Elnu Abenaki are a State of Vermont recognize Tribe, and the Chaubunagungamaug band of Nipmuck Indians are a band of the Massachusetts State recognized Nipmuck Tribe.

January 27, 2025 MassDEP consultation on Zoom with Elizabeth Stefanik and Timothy Jones

Thank you for meeting with the Nolumbeka Project Tribal Coalition representatives on January 27, 2025.

In our brief half hour meeting you indicated, and we suspected sincerely so, that you were there that day to listen to our coalitions environmental, cultural, and historic preservation concerns as they apply to this relicensing process and our challenges with the potential issue of a MassDEP 401 WQC approval to be sent to FERC without addressing our Tribal Coalition's concerns as part of the FirstLight Project 1889 (Turners Falls Project) and the (Northfield Mountain Hydro Pump Storage Project) No. 2485 relicensing Process and the 401 WQC issue.

Past attempts to enter into a dialogue on MassDEP's 401 WQC

Prior to, and including the public information session held on October 10, 2024 in Turners Falls Massachusetts and up to the date of this writing, MassDEP has yet to acknowledge publicly in writing any of our engagement over the last 12 years in this relicensing process or our standing in this MassDEP (WQC) Water Quality Certificate comment period.

What does systemic cultural erasure look like?

Nowhere in any publications from MassDEP on the 401 WQC process has MassDEP acknowledged the Nolumbeka Project Tribal Coalition's participation and standing as a significant land holder and underserved indigenous cultural population in the Project Area of Potential Effect (APE).

During the October 10, 2024 Public Hearing information session Mr Jones made it clear to the public that MassDEP would not be bringing the Nolumbeka Project Tribal Coalition's, cultural historic knowledge and preservation concerns into the 401 WQC process.

Was Governor Healey's EJ Strategy intended to grant MassDEP the right to decide who is and who is not eligible to receive considerations in this EJ strategy?

Mr. Jones comment of intent to disallow the Tribal Coalition's knowledge the right to hold a place in the MassDEP 401WQC is in direct conflict with Governor Maura Healey's Feb 15, 2024 Environmental Justice Strategy, where on page 90 of MassDEP's section of the EJS pages 88 -102, is printed MassDEP's Updated Mission Statement (2021) Quote: "to protect and enhance the commonwealths, natural resources, — air, water, and land — to provide for the health, safety, and welfare of all people and the clean and safe environment for future generations."

Is MassDEP considered an integral part of Governor Healey's EJ policy? What does nondiscrimination look like?

Mass DEP's Environmental Justice Strategy is quoted here as " MassDEP's strategy outlines actions for promoting and integrating environmental justice considerations across MassDEP's programs, policies, activities, and others strategies, as well as meeting MassDEP's environmental justice goals to ensure the equal protection and meaningful involvement of all people residing in the commonwealth, respect to environmental protection, and the equitable development, implementation, and enforcement of environmental laws, regulations, and policies. This strategy aligns with and complements the agencies nondiscrimination and civil rights program".

On page 91, of the Governor Healey's, Environmental Justice Roadmap MassDEP at bullet point 4 is this quote:

"Identifying permitting or other applicable regulatory authority over development projects, brownfield remediation, industrial operations, and commercial facilities, which may impact environmental justice populations and mechanisms to ensure that environmental justice populations **are protected.**"

Old systemic erasure meets new systemic erasure!

There is a 400 year history in America which started right here in Massachusetts, of Indigenous populations being dispossessed of their land and rights for the enrichment of the Colonies and development of the natural resources for industry, and otherwise.

How is this MassDEP 401 WQC assessment is any different in how it applies to MassDEP's EJ strategies?

We question as to how and why in MassDEP's January 24, 2025 117 page DRAFT issue of the 401 WQC with conditions, MassDEP justifies the erasure of our Coalition's standing in the Environmental Justice considerations of the Commonwealth of Massachusetts, and does this Environmental Justice Program, initiated by Governor Healy, only apply to certain cultural groups while excluding Indigenous populations?

Also where in the 401WQC Draft has MassDEP allowed for any consideration of the March 21, 2024 Advisory Council On Historic Preservation (ACHP) directives? (1)

The ACHP directives instruct Federal and State Agencies to ensure that the archaeological sites, historic structures, cultural landscapes, sacred sites, and other sites of religious and cultural importance to *Indian Tribes*, Native Hawaiian Organizations, NHO's, and other *Indigenous Peoples* are equitably considered in decision making.

A quote from the 3/21/2024 ACHP Directive

"These locations, and the reasons they are important, are often best understood and accounted for through consultation with, and by applying the Indigenous Knowledge of associated Indian Tribes, Native Hawaiians, and other Indigenous Peoples."

These directives are also encapsulated in the National Historic Preservation Act (NHPA) and multiple sections of the 106 regulations.

The Advisory Council on Historic Preservation, has identified the integration of Indigenous knowledge into the decision making as a valuable and important part of the Section106 process the ACHP

administers as part of its responsibilities pursuant to the National Historic Preservation Act (NHPA).

¹ For the purpose of this policy, “Indigenous Peoples” include peoples who are indigenous to the United States and its territories and jurisdictions, but are not a federally recognized Indian Tribe, Native Hawaiian, or Native Hawaiian Organization.

***How rich is the Indigenous history here on the Connecticut River APE
And why does it matter?***

We would like to acknowledge some of the archaeological sites, historic structures, cultural landscapes, sacred sites, and other sites of religious and cultural importance to Indian tribes, located in the project APE, however many sacred sites are not discussed here to protect them from looting and misuse.

The Wissatinnewag Village Site is located adjacent to, and considered a part of the Gill Riverside Archaeological District.

Wissatinnewag (19FR-12) is the longest continually habited Indigenous cultural village on the full run of the Connecticut River. The history of the human occupancy of the Wissatinnewag Site is documented at over 10,000 years.

Wissatinnewag is located directly below the Turners Falls Hydro Project Dam located on the West side of the Connecticut River to the old river’s edge and beyond out into the river and on the ancient shale beds/ fishing stations. Wissatinnewag listing on the NRHP is 75000256 Greenfield MA., and is part of the Gill Riverside Historic District.

Wissatinnewag is a 63 acre NRHP Site of which the Nolumbeka Project owns 41 of the 63 acres and is the dominant landowner, with Mass, Fish and Wildlife, holding the deed on the 22 acres of the NRHP Historic site at the waters edge.

It appears that MassDEP and Fish and Wildlife are using segmentation to exclude the Tribal Coalition from exercising our standing in the MassDEP 401 WQC decisions.

Federal law does not recognize the segmentation of a NRHP Archaeological Historic Cultural Site as existing when the intent is to use segmentation to exclude it from compliance with the Advisory Council on Historic Preservation, (ACHP) and or Federal 106 requirements and protections.

Also just a little over 1000 yards north from the Wissatinnewag Village Site above the TF Dam on the West side of the river, under the FirstLight impoundment waters of the Barton Cove in the Gill Riverside NRHP District, lies the main village site that was attacked on the morning of May 19, 1676, where Colonial forces massacred over 300 Indigenous refugees, old men, women and children residing there as victims from King Phillips War, also known in indigenous circles as the Second Puritan War of Conquest. This massacre happened 214 years prior to the near identical 1890 assault at Wounded Knee where 300 indigenous refugees were also massacred.

Unlike Wounded Knee however, no Indigenous Peoples have access to this very sacred site to pay respects and do ceremony as the site is under the impoundment waters of the FirstLight Hydro operations.

The entire village of Riverside Gill MA is historically culturally sensitive and is part of the Gill Riverside Historic District a NHRP listed site.

Why does this rich cultural landscape matter?

For over 10,000 years Indigenous People created a life and Legacy for themselves on the shores, and in the waters of this great river. They left behind for those who knew how to look and see, signs of their lives and successes, living in balance with this land and these waters.

To Indigenous Peoples all over the world water is life, and any body of water that moves is honored as living being.

For century on century and beyond, the Connecticut River has been honored as is a living being and deserving of respect and grace for all the life giving energy she brings to all the peoples who found sustenance, good health, and joy from the power and energy she shares with the landscape and the living beings that come to her for life, always with respect and gratitude.

Indigenous Peoples have returned to the Connecticut River forever to do ceremony and pay respects, and to remember their ancestors who once called this place home.

The landscape all around the hills and in the valleys of this once vibrant place still whisper of a past landscape and life-ways that was beyond description.

The archaeology that has been conducted over the last century speaks of peoples who traveled from as far away as the Ohio Valley and beyond on a seasonal journey to rekindle relations with kin and conduct trade and form new family connections through marital relations. They journeyed with their elders who needed to return to places like Wissatinnewag as a final resting place, and take part in the harvesting of the fish that gathered at the base of the Great Falls each spring.

On May 19, 2004, The Narragansett Tribe's Medicine Man, Running Wolf Wilcox, on invitation from Montague's Town Administrator, Frank Abbondanzio, officially returned to conduct ceremony for the first time in 328 years on the shores of the Connecticut River.

Medicine Man Running Wolf Wilcox invoked a special ceremonial healing of the past historical tragedy that occurred at the Great Falls on May 19, 1676 where Narragansett and a host of other tribes lost over 300 of their ancestors in the massacre that took place there that morning when the village was attacked by colonial forces under the command of one William Turner and 160 men. The Tribal Relations there that morning at the Falls included the Abenaki, Nipmuc, Narragansett, Wampanoag, Pokumuck, Pequot, and a host of other refugees.

Town Administrator Abbondanzio felt that the souls lost at the Great Falls on that fateful morning needed to be released to move on in the hope that a heavy weight the village of Montague carried since its conception would be lifted and a new era of peace and cooperation would be bonded for the future of the village and a new beginning with the Indigenous Peoples here in this place once more.

The hard work leading up to the 12 year history of Annual Pocumtuck Homelands Festival is living proof of the 2004 healing ceremonial legacy and the reclamation of Tribal presence here in their ancient homeland on the Great River.

Shortnose Sturgeon and The Endangered Species Act part 1

The arguments poised by Mass Wildlife that the natural falls and rapids and the 1798 Turners Dam were unsurmountable obstacles for upstream passage of the Shortnose Sturgeon are nothing more than a *convenient excuse* to assist FirstLight and MassDEP to avoid the Endangered Species Act, most especially with regard to the relicensing of the Northfield Mountain Project's adverse effects on the environment that Shortnose Sturgeon need to thrive.

There are a number of parts to Mass Wildlife's assumptions that fall apart with the reality of the geology here in the early post glacial landscape of the Connecticut River Valley and other recent natural events over the last hundred years relevant to Shortnose Sturgeon passage above the Falls at Turners.

Pictures of the Falls during the 1936 flood at Turners Falls show where a dam was suppose to be as only a slight bump in the water level pouring in over where the falls was suppose to exist. During that event there was no falls obstacle to overcome for the Shortnose Sturgeon. Sturgeon are very powerful swimmers, not to be underestimated and they likely made it up over the falls simply by swimming.

An example of their swimming and jumping power was captured in a news paper article last spring. On the Merrimack River a women was documented as receiving a number of facial lacerations after an incident when an Atlantic Sturgeon leaped clear out of the water through the air and into the boat she was sailing on. She received cuts on her face by the chutes from the sturgeon while standing in the boat. Sturgeon are powerful swimmers and known to be able to easily leap clear out of the water. The 1936 flood at Turners Falls Dam would have been no significant obstacle for a Sturgeon that powerful to overcome.

Shortnose Sturgeon The Endangered Species Act Part 2

To get back to the post glacial geology of the Connecticut River valley, shortly after the earthen dam in Middleton Connecticut that created Glacial Lake (Hadley) now known as Lake Hitchcock, failed and opened up the full run of the valley for the free flow of the glacial streams working their way to the Atlantic Ocean, the valley was filled with over 80 feet of glacial till and debris over which all the streams flowed southward.

There were no falls as obstacles to overcome. There were an endless number of south flowing streams with which sturgeon moved up to open more spawning grounds to the north. In fact these streams flowed on both side of the archaeological Wissatinnewag Site leaving a Western beach front on the west side of Rocky Mountain where Wissatinnewag is located.

It was many of hundreds of years later that the glacial fill was cut down into by the southward flow of the many streams that made up the drainage systems here in the Connecticut River Valley to force the Connecticut River to its' current channel. (2)

By that time the sturgeon established their spawning grounds and populations well North of the Great Falls. They have been there ever since though under industrial induced environmental pressure over the last hundred and fifty years or more.

2 Reference pages 19, and 59, of the 1963 printing of "The Flow of Time by George W Bain Professor of Geology, Amherst College, and Howard A. Meyerhoff Professor of Geology, University of Pennsylvania.

"the Connecticut lowland is old, but it's ancient drainage lines were buried by the deposits, left in glacial Lake Hadley. The Rivers present course was established upon these lacustrine sediments, and the inner valley plane is excavated in them". "Before entrenchment took place, the south-flowing reach of the river above Millers Falls was deflected westward across the lake plane by the delta of Millers River".

eDNA testing above the Great Falls

Testing to *insure negative results vs. testing where the fish live.*

FirstLight speaks of single round of eDNA sampling for Shortnose Sturgeon above the Turners Falls Dam. This deeply flawed one time study to look for eDNA evidence of Shortnose Sturgeon was done collecting

surface water samples taken from the Connecticut River that came up negative for Shortnose Sturgeon eDNA.

FirstLight offered up those tests as proof that the probability of any Shortnose Sturgeon present in the Turners Falls Impoundment is extremely low.

As Shortnose Sturgeon are bottom dwellers living deep in rivers, the samples needed to come from where they live.

The first time independent scientific research divers went down to the bottom of the river where the Sturgeon live and took water samples, a number of those samples produced positive eDNA hits for Shortnose Sturgeon.

A positive eDNA test results means that Shortnose Sturgeon were somewhere near the divers shortly before the water samples were collected to have shedded of cell samples that produced the positive eDNA evidence of Shortnose Sturgeon.

Positive Shortnose Sturgeon eDNA samples were detected at a number of different locations above the Turners Dam up to the Bellows Falls Dam.

This was the *inconvenient truth* that suggests if you don't want to find any Shortnose Sturgeon, don't go looking where they live.

The Shortnose Sturgeon and the Endangered Species Act Part 3

The Northfield Mountain Hydro Projects adverse effects on the Shortnose Sturgeon and other species living in the impoundment section of the Connecticut River

The Northfield Mountain Project's powerful adverse impact on the riverine environment and water quality in the Impoundment section of the Connecticut River is not difficult to bear witness to. *Simple walk the Project APE on the rivers edge and look down.*

Can MassDEP and FirstLight have a legitimate argument that the Shortness Sturgeon don't have the provable numbers in the impoundment section of the river to intersect with the Endangered Specie Act when the

Northfield Mountain Project is the source of most of the impediment that is making life for the Shortnose Sturgeon and other important species living in the impoundment waters difficult? *Is not the Endangered Species Act meant to rectify this situation?*

What do Shortnose Sturgeon need to live and thrive? We only need to look at the environment that existed prior to construction of the Utilities on the Connecticut River including the Northfield Mountain Project.

Currently, siltation has obscured the *living river bottom* that once existed in this post glacial riverine environment.

A free flowing glacial stone river bottom provided an environment that consisted of a series ripples, pools and runs that occurred in a formula of seven times the width of the stream. In other words, if the stream is 10 feet wide, the ripple, pool, run sequence would occur every 70 feet. That is what colonists found here in the Connecticut River prior to building the industrial complex that harnessed the power of moving water.

How does this apply to indigenous historical places?

It is the ripple sequence at the end of the pool where the river shallows out where indigenous people created their fording places, and also their gathering places for commerce trade and exchange, and often short term villages with shared cultural landscapes, ie utilitarian stone structures for processing harvested foods and tool making.

Why is the pool, ripple, run sequence important sturgeon? The answer is found at the end of the pool sequence just up stream of the ripple section of the stream or river where the water has to flow up hill at the end of the pool where most high quality game fish lay their eggs. This is where the water rapidly flows up through eggs to bring oxygen to the eggs to survive long enough to hatch. It is also made up of the right size glacial material to hold the eggs in place against the up hill flow of the pool waters exit point.

That important post glacial quality river bottom still exists in the Connecticut River, but its blanketed with a deep layer of *project induced silt* that is disturbed daily by the actions of the Northfield Mountain Project, and stifled by the Turners Falls Dam Impoundment that constrains the

River's ability to annually flush the silt down river as is in a natural riverine unrestricted flow environment.

The daily rise and fall of the river elevation from the Northfield Mountain Project's intake and release cycles, to the tune of millions of gallons a day, continually stir up and suspend in the water column accumulated silt while at the same time continuing to *erode* the exposed river bank releasing more organic fine particles into the water. *Erosion is the major contributor of siltation. Siltation is the result of Erosion. Erosion harms the environment sturgeon and other important species need to survive and thrive. Erosion destroys important archaeological contextual relationships with historical cultural patrimony. Erosion erases away thousands of years of indigenous cultural history. **Erosion is a form of cultural erasure.***

MassDEP's job is to mitigate that from happening by invoking adherence to the Clean Water Act, and the Mass Surface Water Quality Standards.

***Project Induced Erosion and Its impact on indigenous ancient cultural patrimony in the Impoundment section above the Turners Falls Dam
Part 1***

MassDEP has received more than enough photographic evidence of impacted shorelines with significant erosion on the east and west banks of the Connecticut River that wouldn't require us to provide any more here.

What one can't see in those pictures however, is what is slumping down into the waterbody when no one is there to bear witness, and that is the cultural evidence of over 10,000 years of Indigenous Presence on the shores of the Connecticut River.

Our Coalition's deep knowledge of the cultural lifeways of the first peoples here on the shores of the Connecticut River and our review and research of past extensive archaeological documentation done over the last 75 years, as well as discoveries by private citizens and newspaper accounting of such discoveries along with the information passed down to us from our elders, speak of how close to the river the first peoples lived, fished, and planted their crops of corn beans and squash.

Extensive trade systems also took place right at the rivers edge. These well known places, many no longer existing, inform us how often cultural

materials and archaeological sites are being destroyed by the endless *project induced erosion*.

We have witnessed land being washed away year after year for over 5 decades now without accountability from the utilities, MassDEP and other regulatory agencies.

We see this most especially with the Northfield Mountain Project's operational protocols that always seeks out unjust profits over good environmental stewardship absent any consideration for Indigenous cultural preservation or the rule of environmental laws both State and Federal.

The life-ways of the first peoples here on the Connecticut River and its' tributaries exists in the material cultural patrimony in the ground that is disturbed year after year and decade after decade by the continued operation of the Northfield Mountain Project's aggressive suck and dump operational schedules that wash up and down the river's edge destabilizing the riverine environment that is trying to survive there. The boat wake theory of erosion offered by FirstLight, is just a decoy coverup for the real source, the Northfield Mountain Project.

When the riverine environment dies the Connecticut River dies with it and everyone loses something very special, however Indigenous Peoples lose their history, culture and their sacred and ceremonial landscapes.

Project induced insufficient minimal flows in Bypass Reach-1 of the River directly below the Turners Project Dam, and the adverse impact to Indigenous spiritual and environmental ways of being to looting and loss of historical cultural patrimony part 2

In the late nineties when the Friends of Wissatinnewag, now the Nolumbeka Project, purchased the 63 acres of the ancient Wissatinnewag Village Site. We started to help the property heal with ceremony, then we put our backs into the land to bring life back to this majestic ancient cultural gathering place.

Part of the process needed to pay off the mortgage for this special place and save what was left, was to bring in a partner.

The Mass Division of Fisheries and Wildlife and their charge to oversee the implementation of the Natural Heritage and Endangered Species Program (NHESP) felt like a perfect fit. After all, if you can't trust, the Mass Division of Fisheries and Wildlife to protect endangered species like the Shortnose Sturgeon or the cultural patrimony of this National Register of Historic Places, landmark, (NRHP reference No. 75000256, Gill Greenfield Mass.) then who can you trust? So we chose to share the deed for this very sensitive historic landmark with Fish and Wildlife.

We never expected to be obstructed from participating in the cultural and environmental safeguarding of our shared NRHP Landmark because of our relationship with MDFW.

It appears segmentation of a National Historic Site is being invoked with the intent to obstruct the Nolumbeka Project Tribal Coalition from having standing in these proceedings. That tactic is recognized by the NHPA, and 36 CFR 800 Federal 106, as disallowed.

In our (attached) February 9, 2023 letter to Jesse Leddick, Chief of Regulatory Review (NHESP), we attempted to educate Jesse, who we believe has never visited that area of the NRHP Site, with a written educational deep dive into the history of the Wissatinneag property.

In indigenous sensibilities the Connecticut River, and all that rely on her to survive, are alive and deserving of respect. A Eurocentric mindset only sees resources here to be captured and manipulated for power and profit.

Comments on the adverse and destructive nature of insufficient minimum flows on the chemical and physical properties of the water in Bypass Reach-1 of the River.

Aggressive solar heating occurs during the summer and fall months on the exposed shale beds in Bypass Reach-1 when only 500 c.f.s. is allowed to occur as in the draft Mass 401 WQC.

The 500 c.f.s. is so low it pulls stored solar heat from the hot shale beds and sends it slowly down stream into the habitat waters of the Shortnose Sturgeon. The flow releases are supposed to be conditioned to assist the survival of the Shortnose Sturgeon. This form of pollution is in conflict with

the Clean Water Act and Mass Surface Water Quality Standards, 314 CMR 4.00.

We have commented on this adverse condition a number of times over the last decade, including our concern for the survival of the Shortnose Sturgeon in the Bypass Reach-1.

We have repeatedly commented on how important the Sturgeon is to Indigenous Peoples, we will do so once more in this document. A release of 500 c.f.s. is a *violation of the Clean Water Act, the endangered species act* and the *Mass SWQS* set by the State of Massachusetts when an endangered species like the Shortnose Sturgeon are the recipients of such a water restriction.

FirstLight has suggested the Bypass Reach-1 of the project needs a minimum flow of 2000 c.f.s. to support the Shortnose Sturgeon. A 2000 c.f.s. flow regiment would assist in mitigating the continual loss of looted indigenous cultural patrimony and the looting for profit of ancient geological resources, dinosaur prints, harvested from the exposed dry river bed when only a 500 c.f.s. flow is released.

As many other stakeholders have noted, during the summer of 2024 on two separate occasions, adult Shortnose Sturgeon found themselves stranded in pools directly at the base of the Turners Dam elevated 10 feet above the lower Connecticut River waters they had originally swam in to reach the dam. Some researchers believe these sturgeon were trying to migrate up stream at the time of their stranding.

Historically we know of no other documented discoveries over the decades by FirstLight employees of any other Sturgeon strandings below the TF Dam, which prompts the question how many times might this have happened and gone unnoticed or more importantly unreported.

It appears the public pays more attention to these Sturgeon strandings than FirstLight. The question also is how many endangered Shortnose Sturgeon have been stranded in these upper pools and never made it back to the lower waters alive. We question, Is that considered “a taking” by definition under the Endangered Species Act? This problem will never be solved by a minimum flow release of 500 c.f.s.

To recap, by FirstLight's own accounting a minimum flow of 2000 c.f.s. in Bypass Reach-1 is needed to create a safe and healthy environment for Shortnose Sturgeon, listed as an endangered species, to thrive below the TF Dam.

What's new in project induced erosion, and how destructive is it?

We want point out for the first time to MassDEP, as we did previously to FERC, *a new form of erosion we have called project induced ice plate failures*, The Northfield Mountain Project's suck and dump operational protocols which raise and lower the water table daily by as much as 6 feet in some places, are the resultant causation of this new wintertime phenomena.

Since the closing of the Vernon Nuclear Plant, the year round release of super heated nuclear plant cooling waters into the Connecticut River has come to an end. For the first time in a half century the Connect River impoundment has been freezing shore to shore.

In a natural seasonal progression of a river that freezes over, these ice plates are well into the melting process prior to their failing as part of the spring freshet. However with the Northfield Mountain Project year-round water elevation rise and fall process, the new condition of winter full river freezes shore to shore are exposed to the laws of physics in a way they they have never previously been exposed to.

The dead weight of these ice plates, many tons, spanning sometimes over 300 feet and more shore to shore, left unsupported by the buoyancy of the water directly below, fail and slump toward the center of the channel. When these failures happens, as has been documented in 2019 and 2021, these ice plates drag the frozen organic material they have encased, including tree roots, other vegetation, and riverbank out into the channel leaving behind large gouges in the rivers edge. This is an aggressive form of erosion not previously documented that needs to be seriously addressed in consideration with the 401 WQC erosion portion of the process.

The Nolumbeka Project Tribal Coalition's Conclusion and Assessment of the MassDEP DRAFT 401 WQC.

Mass DEP's current Draft of the 401 WQC issue has failed to include any protections for Indigenous Historical Cultural Properties as instructed under 36CFR 800, and the March 21, 2024 issue from the Advisory Council on Historic Preservation (ACHP), requiring early in the process to engage indigenous voices, knowledge, and considerations, prior to taking any actions that would adversely effect Indigenous Historical Cultural Properties. Mass DEP has failed to engage The Nolumbeka Project Tribal Coalition for access and inclusion to our unique Indigenous Knowledge of the Cultural Landscape, including the Connecticut River and her tributaries. The full run of the Bypass Reach, and the upper impoundment is registered under the NRHP reference (No. 75000256), in Gill Mass and Greenfield Mass, and includes the Bypass Reach and all of the Islands and Rock Dam as well as the Wissatinnewag Property and into the impoundment where the currently submerged Historical Village Massacre Site from the Attack on the morning of May 19, 1676 occurred. Also included in the Registered Historical Sites is the 2008 National Register of Historic Places Ceremonial Scared Hill site located at the Turners Falls Airport, 0B5, which extends out in a 16 mile radius from the Ceremonial Hill and includes all the Rivers waters up to Vernon VT and beyond.

A reset in the DRAFT 401 WQC needs to allow for and include The Nolumbeka Project Tribal Coalition's Indigenous Voices, sensibilities and concerns prior to being accepted as a finished document.

We request MassDEP to reassess the Insufficient Minimum flows of 500 c.f.s. below the Turners Dam/ Bypass Reach to protect Shortnose Sturgeon and other aquatic life, to a minimum flow rate of 2000 c.f.s. which would mitigate the looting of Indigenous Cultural Patrimony while at the same time cooling the summer and fall waters moving over the sun soaked shale beds in the Bypass Reach Run. The obligation and adherence to the Clean Water Act to prevent the stranding of the Shortnose Sturgeon below the Dam would also be served with this increased flow coupled with controlled releases to calm the historical extreme release fluctuations, must be incorporated into any 401 WQC issued by MassDEP.

Mass DEP must address the unacceptable level of EROSION that has been compromising the riverine environment on both sides of the river for the last 50 years. Erosion has significantly contributed to the loss of Indigenous Cultural Patrimony for far too long now into the 21st century.

The Northfield Mountain Project is an experimental environmental failure, and the major source of erosion, loss of a healthy ecosystem, loss of Indigenous Historical Sites, and a deterrent to the recovery of the Shortnose Sturgeon as instructed in the Endangered Species Act.

MassDEP must prohibit any increase in the storage capacity of the NMP, and in fact must arrange for the decommission of the Northfield Mountain Project. The grid has done fine when the NMP is not running and the river gets a chance to heal when it is shut down.

MassDEP must require FirstLight to create a fully functioning fish lift over the next three years. The United States of America put a man on the moon in 1969 with just transistor and tube technologies, we can build a fish lift in Less than three years that works. Mass DEP must require this.

As technologies are so rapidly advancing and new forms of energy are coming online everyday, For MassDEP to issue a 401WQC for a 30 year license or worse a 50 year license for the failed experiment called the Northfield Mountain Project, Is irresponsible, and will be a burden to taxpayers for the next three generations. Governor Healey has put forth a scheme that will put the taxpayers of the Commonwealth on the hook for the next 30/50 years subsidizing the in efficient operation of the Northfield Mountain Project. As a Commonwealth we can do better than that.

The Nolumbeka Project Tribal Coalition would like to offer our thanks all our supporters over the years, and we pray MassDEP imbed in their decision and language clear recognition of the harms past and future that would occur with the issue of a 401 WQC to the utilities as outlined in the current DRAFT 401 WQC offered up for review .

Wliwni - Thank You (Abenaki)



Joseph Graveline:

Senior Advisor for The Nolumbeka Project Tribal Coalition

February 9, 2023

Jesse Leddick
 Chief of Regulatory Review
 Natural Heritage and Endangered Species Program
 Mass Division of Fisheries and Wildlife (NHESP)
 1 Rabbit Hill Road
 Westborough Mass 01581

Dear Jessie,

My name is Joe Graveline, I am Senior Advisor for the Nolumbeka Project and group coordinator for a coalition of tribes which include the Elnu Abenaki, the Chaubunagungamaug Band of Nipmuck Indians working with the Nolumbeka Project who together as stakeholders since 2013, wish to comment on the relicensing of the Turners Falls Hydroelectric Project, Project No. 1889 (Turners Falls Project), and the Northfield Mountain pumped storage project FERC Project No.2485 (The Northfield Mountain Project) most specifically with regard to the flow rates below the Turners Falls dam in the area known as the Bypass Reach.

A little background first, the shale beds, most especially those on the western bank of the Connecticut River, is a section of the river that's highly sensitive to the history of the indigenous people who lived in the Connecticut River Valley and on the village site known as Wissatinnewag at the top of the hill on the West side of the river for over 10,000 years. The Wissatinnewag site has been archaeologically documented to have been in use continually for that ten thousand year period. The Nolumbeka Project along with the U.S. Fish & Wildlife Service hold the deeds on that piece of property. There are trail systems from the Wissatinnewag Village site that lead down to the ancient river's edge. These ancient trails systems supplied access to canoe launching, fish processing, fishing stations, and sacred ceremonial stone landscape structures used for ceremonial practices. The name Wissatinnewag was documented by colonial trading post businessman and historical figure John Pynchon in his early records of the areas in his Indian trading control. Wissatinnewag has been loosely translated to mean, Slippery Hill or Shining Hill due to the fact that it had been washed in a mist for most of that ten thousand year history.

The shale beds that run past the Wissatinnewag Village and down to the mouth of the Deerfield River have a history of being home to countless fishing weirs. Some of these fishing stations were built of bracken with large and small stones. We and others have discovered some of the stones built into those weirs, were carved sacred effigies in the image of turtles and fish, some are large, 100 pounds or more some as small as your thumb. Many the size one might pick up and walk away with as a curiosity. The elders have instructed us that the stones contain the prayers of the people to help guard the welfare of the waters and the fishes. We have come to classify these as Ceremonial Stone Waterscapes.

These objects and many more artifacts along with dinosaur tracks, the prints of the ancient Thunder Birds who ruled this area before the people arrived, are at risk from the adverse effects of the dewatering of the river bed.

Over the last 50 years, and most especially since the Turners Falls Dam height was increased during construction in the 1970s, the shale beds have been left exposed and dry for the majority of days throughout the calendar year. Flow rates have been extremely low and often nonexistent leaving the shale beds vulnerable to looters and sightseeing visitors who wish to bring home with them something special from their visit on the river and their walks out on the dry river bottom. Modern portable power tools have made the harvesting pieces of the shale stone, dinosaur prints, fairly quick and easy.

We consider the dewatering of the river bed and the exposure of the shale beds an adverse effect which could easily be remedied by increasing flow rates over the shale beds throughout the year at a minimum rate of 600 cfs with even a better rate of protection at 1500 cfs.

Wliwni - Thank You (Abenaki) for your consideration of our request.

Joe Graveline
Senior Advisor The Nolumbeka Project
oldgraywolf@verizon.net
1 (413) 657-6020



PO Box 383
Madison, CT 06443
renewne.org

February 24, 2025

By email: dep.hydro@mass.gov

Elizabeth Stefanik
MassDEP
Attn: FirstLight 401WQC, MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114

Subject: FirstLight 401 WQC

Ms. Stefanik:

RENEW Northeast, Inc. ("RENEW")¹ offers this letter in support of the Draft 401 Water Quality Certification ("401 WQC") for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects (collectively, the "Projects").

Mid and long-duration energy storage is a critical component of enabling a clean energy transition. A recent RENEW analysis attached to this letter shows how Massachusetts needs to maintain the region's existing energy storage and hydroelectricity resources to achieve the goals in its Clean Energy and Climate Plan for 2050. As Massachusetts looks to incorporate significant amounts of renewable energy into the grid by 2050, it will have an increasing need for utility-scale energy storage and generation assets that can be rapidly deployed to balance the electric grid. Pumped-hydro resources like Northfield Mountain can do that and reduce carbon emissions by displacing more carbon-intensive fossil generators.

The Draft 401 WQC advanced by the Massachusetts Department of Environmental Protection ("MassDEP") represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations. Together, the Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. Northfield Mountain's fast response capability, long-duration, and large capacity will play an even greater role in balancing the grid as the region adds more renewable energy

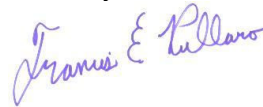
¹ The comments expressed herein represent the views of RENEW and not necessarily those of any particular member of RENEW. RENEW is a non-profit association uniting environmental advocates and the renewable energy industry whose mission involves coordinating the ideas and resources of its members with the goal of increasing environmentally sustainable energy generation in the Northeast from the region's abundant, indigenous renewable resources.

Elizabeth Stefanik, MassDEP
February 24, 2025
Page 2

resources, thanks to its ability to capture over 1,100 megawatts of power generated during off-peak hours and dispatch it during times of high demand when it is needed most.

RENEW appreciates MassDEP for its thoughtful, comprehensive Draft 401 WQC decision that both supports a healthy Connecticut River, the continued operations of FirstLight's Northfield Mountain and Turners Falls Projects, and, therefore, the Commonwealth's clean energy future. Thank you for your attention to RENEW's comments.

Sincerely,



Francis Pullaro
President

Attachment: Power Advisory, *Massachusetts Clean Energy Procurement Needs* (October 21, 2024).

Massachusetts Clean Energy Procurement Needs

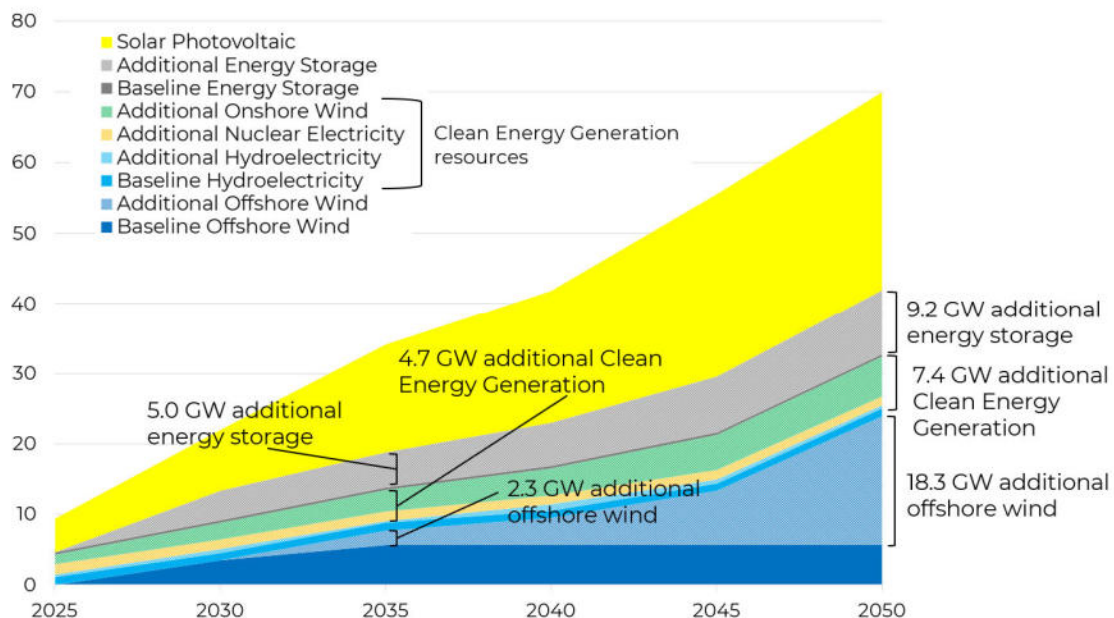
October 21, 2024

Achieving Massachusetts' statutory climate goals requires continuing deployment of clean energy resources. Under current market structures deployment is most effectively achieved through competitive procurements for long term contracts, which enable developers to secure necessary financing, and which provide ratepayers cost certainty and a hedge against volatile fossil fuel prices. To determine the timing and scope of necessary procurements, this analysis evaluates resource needs identified in the Commonwealth's *Clean Energy and Climate Plan for 2050*¹ in comparison to volumes of clean energy that have been built, procured, or for which additional procurement is authorized (i.e., "baseline" resources). Taking account of timelines from procurement to deployment, the analysis finds that staying on track with climate targets over the next decade and beyond requires:

- Authorizing new procurements from 2025 to 2027 for **5 GW of Energy Storage**
- Authorising new procurement by the end of 2025 for **4.7 GW of Clean Energy Generation**, which includes RPS Class 1 renewable energy, hydroelectricity, associated transmission and existing nuclear energy
- Procurement in 2026 for remaining 2.1 GW of authorized Offshore Wind (OSW) plus authorizing **additional procurement of 2.3 GW of OSW**

The chart below depicts Massachusetts' share of energy resources needed to decarbonize the regional grid, consisting of baseline resources and additional resources required to achieve deployment targets in the *Clean Energy and Climate Plan*. Solar is eligible for Class 1 renewable energy procurement, but solar deployment is more commonly driven by net metering and targeted programs such as the Solar Massachusetts Target (SMART) program and as such procurement of solar is beyond the scope of this analysis.

Massachusetts Share of Regional Clean Energy Capacity (GW)



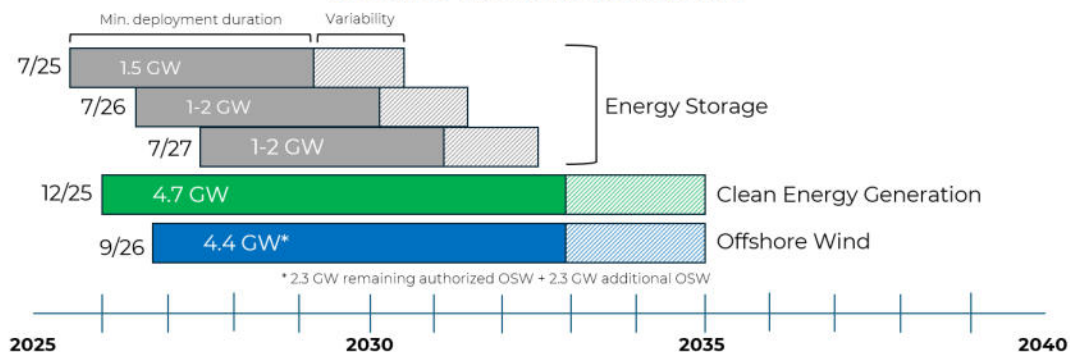
The following table lists resource requirements by capacity type, including baseline resources and additional needs. "Additional Clean Energy Generation" is the combined total of Additional Hydroelectricity, Additional Nuclear Energy and Additional Onshore Wind. *Italics* indicate resources for which near-term procurement is required.

Massachusetts Share of Regional Clean Energy Capacity (GW)

	2025	2030	2035	2040	2045	2050
Baseline Offshore Wind	0.0	3.5	5.6	5.6	5.6	5.6
<i>Additional Offshore Wind</i>	<i>0.0</i>	<i>0.0</i>	<i>2.1</i>	<i>3.9</i>	<i>7.7</i>	<i>18.3</i>
Baseline Hydroelectricity	1.1	1.1	1.1	1.1	1.1	1.1
<i>Additional Hydroelectricity</i>	<i>0.3</i>	<i>0.5</i>	<i>0.3</i>	<i>0.8</i>	<i>0.5</i>	<i>0.4</i>
<i>Additional Nuclear Electricity</i>	<i>1.5</i>	<i>1.4</i>	<i>1.4</i>	<i>1.3</i>	<i>1.3</i>	<i>1.3</i>
<i>Additional Onshore Wind</i>	<i>1.4</i>	<i>2.3</i>	<i>3.0</i>	<i>3.8</i>	<i>5.0</i>	<i>5.7</i>
<i>Combined Additional Clean Energy Generation</i>	<i>3.2</i>	<i>4.2</i>	<i>4.7</i>	<i>6.0</i>	<i>6.8</i>	<i>7.4</i>
Baseline Energy Storage	0.3	0.3	0.3	0.3	0.3	0.3
<i>Additional Energy Storage</i>	<i>0.0</i>	<i>4.2</i>	<i>5.0</i>	<i>6.1</i>	<i>8.0</i>	<i>9.2</i>
Solar Photovoltaic	4.8	8.6	15.3	18.8	25.9	28.0

Procurements must be conducted sufficiently in advance of targeted deployment dates to account for resource-specific development timelines. As of 2023 energy storage projects in New England averaged 3.75 years from requesting grid connection to commercial operation,ⁱⁱ and staggered procurements with flexible volumes should be run in 2025, 2026 and 2027, targeting total deployment of at least 4 GW by 2030 and 5 GW by 2035. Procurement of Clean Energy Generation should be timed to enable participation by large projects that require new transmission to access remote onshore wind and hydroelectric resources. Large transmission projects in New England can take close to a decade to complete,ⁱⁱⁱ and procurement of Clean Energy Generation needed in 2035 should be conducted by the end of 2025. Eligible resources able to provide power sooner should also be procured to help achieve the 2030 target of 4.2 GW of Additional Clean Energy Generation. Future OSW projects may utilize floating technology and/or require high voltage direct current (HVDC) transmission to access remote interconnection points, extending deployment timelines. HVDC supply chain constraints and nascent floating OSW technologies may need up to 9 years from procurement to deployment, thus requiring procurement of 4.4 GW in the next OSW procurement cycle in 2026 to deploy 7.7 GW of OSW by 2035.

Resource Procurement Timeline



Depending on market structures, policy reforms, and technology costs, additional procurements will likely be needed into the 2030s but are beyond the scope of this analysis.

ⁱ Resource needs are based on the Massachusetts Workbook of Energy Modeling Results "Phased" scenario from the Massachusetts Clean Energy and Climate Plan for 2050, available at: <https://www.mass.gov/info-details/massachusetts-clean-energy-and-climate-plan-for-2050>. Resource capacities for onshore wind, nuclear and solar listed on tab "8. Electric Capacity" are totaled for the region and allocated to MA on a load share ratio based on "9. Electricity Demand" tab. Total regional OSW capacity from the "8. Electric Capacity" tab is allocated as follows: 3 GW to ME in 2040 to reflect statutory OSW target; 0.4 GW to RI in 2025 and 0.6 GW in 2030 to reflect procured capacity and 1.2 GW in 2035 to reflect procurement of an additional 0.8 GW per statutory authorization; 0.7 GW in CT in 2025 and 2030 to reflect contracted capacity and to-be-announced procurement results, 2.3 GW in 2035 to reflect statutory target, and 5.7 GW after 2040 based on Electrification Load Balanced Blend scenario from 2020 Integrated Resource Plan. Remaining OSW capacity is allocated to MA. Energy storage capacity allocated to MA includes 1.8 GW of existing pumped storage, plus load-share determined proportion of additional energy storage required across the region. Hydroelectric capacity allocated to MA includes a load-share determined proportion of in-region hydroelectricity included in the "8. Electric Capacity" tab plus a load-share determined proportion of transmission from Quebec to New England states in the "10b. Electric Transmission Flow" tab.

^j See: [Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection | Energy Markets & Policy \(lbl.gov\)](#)

ⁱⁱⁱ The Northeast Clean Energy Connect Project is projected to come online in 2025, 8 years after issuance of the 83D selection on 3/17/17. At least four other large reliability transmission projects took 6.9 to 9 years to complete, see: https://www.iso-ne.com/static-assets/documents/2015/02/a2_nht_greater_boston_cost_analysis_public.pdf

From: [Jason Kahn](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401WQC
Sent: 2/24/2025 11:50:35 AM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To Whom it may Concern,

My name is Jason Kahn and I live in Amherst. In the short 23 years I've been visiting and living in Amherst, I have been taken by its beauty and how it supports life all along its length. Whether the rich agricultural lands that occupy its floodplain or the wealth of wildlife that always amazes me. In every season I've seen amazing waterfowl, fish that would normally exist in any eastern river, notable absent is the Atlantic salmon, but the species that truly excited me was learning that the Shortnose sturgeon exists in the waters of the Connecticut River. These amazing animals have been in existence since the time of dinosaurs. For 70 million years they have evaded the finger of extinction. They survived the asteroid that wiped out their land based and many aquatic based contemporaries. Don't you think it would be sinful that through administrative expedience, we further endanger these living fossils? Is tighter regulation of the river's depth as well as the drawdown from the Northfield Reservoir sufficiently hard to put these fellow beings at risk of their population declining? I think we all know that the answer is no. We should do all we can to keep the river's biodiversity as rich as possible.

Thank you for your consideration in this matter.

Sincerely,
Jason Kahn
Board President
Rewilding Institute

Eve Vogel
Regine Spector
Christine Hatch

UMass Energy Policy & Rivers Group / Energy Geographies & Politics Project / RiverSmart Communities
Department of Earth, Geographic, and Climate Sciences
Department of Political Science
UMass Amherst

Elizabeth Stefanik
MassDEP Bureau of Water Resources
100 Cambridge Street, Suite 900
Boston, MA 02114
dep.hydro@mass.gov

February 24, 2025

Re: FirstLight's 401 Draft Water Quality Certificate, Jan 24, 2025
Northfield Mtn Pumped Storage Project No. 2485-071, Turners Falls Project No. 1889-085

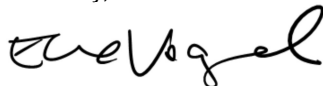
Dear Ms. Stefanik,

Please accept the following comments on the draft 401 Water Quality Certification (WQC) for the Turners Falls Hydroelectric Project (FERC No. 1889-081, "Turners Falls project") and Northfield Mountain Pumped Storage Project (FERC No. 2485-063, "Northfield Mtn").

We are residents of Massachusetts' portion of the Connecticut River Valley and UMass Amherst professors who specialize in water and energy from multiple standpoints. Vogel and Spector lead the UMass Energy Geographies and Politics Project, which consists of professors, student researchers, and alumni who work on electricity policy, markets, politics, sustainability, and environmental justice. Vogel leads a subgroup, the UMass Energy Policy and Rivers group, which brings special expertise on energy markets and policies related to hydropower and rivers, and related river and community impacts, policy, and regulatory processes. Hatch and Vogel led the RiverSmart Communities project, a project looking at how to use the science of fluvial geomorphology and predictions of climate change to help New England communities work with river processes to reduce future flood damage and costs.

All of us have collaborated and consulted closely with a variety of agencies, NGOs, legislators, communities, and frontline activist groups for many years on water, river, and clean energy science, management, and policy in Massachusetts and beyond. Vogel has been a participant-observer in the relicensing of the FirstLight projects since before the official start of the process in 2012, and Spector since 2017. Hatch has been involved with Connecticut River science since 2011.

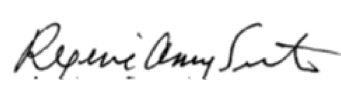
Sincerely,



Eve Vogel, Ph.D., Geography
Energy Geographies and Politics
Project
RiverSmart Communities
Dept of Earth, Geographic, and
Climate Sciences
UMass Amherst



Christine Hatch, Ph.D.,
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Regine Spector Ph.D., Political
Science
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MassDEP Draft Water Quality Certificate for FirstLight's Turners Falls Project and Northfield Mtn, Jan 24, 2025—COMMENTS by Vogel, Spector, Hatch, UMass Amherst

Summary:

The Turners Falls project and Northfield Mountain have strong energy benefits and very negative environmental impacts. While FERC's role is to issue a license that balances the tradeoffs between these, MassDEP's role is to ensure that operations and management under the license do not violate federal or state clean water standards. The current draft does not provide that assurance. It builds overly closely from the Flows and Fish Passage Settlement Agreement (F&FP), failing to provide an independent review and failing to provide protection of water quality. The draft WQC is weakest in the same place as the F&FP: a failure to assess and mitigate the ongoing and future impacts of Northfield Mtn hydropеaking. To ensure that these projects will meet water quality standards now and into the future of a potentially 50-year license, MassDEP must refine a number of its Special Conditions and impose several additional conditions. These include:

1. Additional studies on the water quality impacts of Northfield Mtn operations, restrictions until water quality is assured, and decommissioning funds to avoid a stranded asset with long-term water quality impacts

- (a) Baseline and periodic monitoring, assessment and evaluation of the hydrological impacts of Northfield Mtn hydropеaking (including magnitude, duration, frequency, and seasonality of water level ramping, and resulting changes in velocity); (b) the impacts of these on aquatic life, riparian areas, invasive species, and erosion/sediment as well as other water quality indicators; (c) future modeling of changes in hydropеaking and water quality impacts based on climate change and predicted changes in the electric grid and markets, and (d) the impacts of these on water quality building from the empirical studies of parts a and b; and (e) adaptive management of operations restrictions based on this information so as to protect and enhance water quality.
- Restrictions until such studies are completed on: minimum *and* maximum levels in the Turners Falls Impoundment (TFI), *extended durations or high frequencies of high-volume pumping or generation*, especially during seasons of sensitivity of aquatic life (e.g. fish migration seasons), with carve-outs for urgent grid needs such as scarcity conditions, provided there are also requirements for mitigation for any exceptional impacts at such times.
- Set-aside funds for decommissioning once the project is no longer economical.

Relatedly:

2. Monitoring data, including historical data, must be robust, scientific, regularly produced, and publicly available.

Additionally:

- 3. Endangered Short-Nose Sturgeon must be included** in all fish-related studies and, as appropriate, effectiveness testing related to fish passage
- 4. MassDEP must require public participation opportunities and facilitation and technical support for consultations with federal and state recognized tribes.**

Background on these is below, followed by specific recommendations on the Special Conditions. Additionally, all of these are built on earlier comments we have provided in this process, from which we have provided extended excerpts. These are provided in full as Attachments:

- A. Energy Policy and Rivers group et al re: FirstLight's Flows and Fish Passage Settlement, May 26, 2023
- B. Vogel re: DOER's Mid- and Long-Duration Energy Storage Study, Sept 1, 2023
- C. Energy Policy and Rivers Group et al. re: 401 Water Quality Certificate Applications, June 3, 2024
- D. Vogel comments to FERC re: "Notice of revised procedural schedule for environmental impact statement," December 20, 2024

Detail / Background: Needed additional conditions:

1. Additional studies on the water quality impacts of Northfield Mtn operations, restrictions until water quality is assured, and decommissioning funds to avoid a stranded asset with long-term water quality impacts

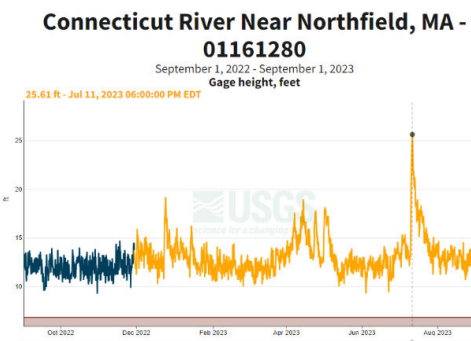
A. Background on rationale for needed added conditions:

- *There is inadequate data on the impacts of Northfield Mtn hydropeaking, but enough to know the impact on aquatic life, erosion, streambank and riparian ecosystems, and other aspects of water quality is enormous.*

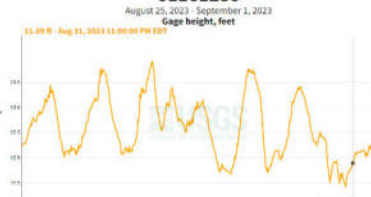
In the draft WQC, MassDEP provides considerable discussion of the impact of hydropeaking on the portion of the Connecticut River that now serves as the Turners Falls Impoundment (TFI). But it does not provide extensive data, and seems dubious about some of the impacts. For example, it says “some report that the river flows backwards at times during pumping and generation” (p. 16). In our comments on the DOER storage report (Attachment B) we provided a deeper analysis of this and some of the problems caused by hydropeaking, including reverse flows. We offer an extended excerpt here:

Open-loop pumped storage projects use Massachusetts rivers as their lower “reservoir,” and because of this, they have profound environmental impacts. Every time they “charge” (pump) they suck up large volumes of river water, causing river levels to drop. They have the ability to suck up more water flow than the entire river sometimes provides. When this happens, from the downstream dam (Turners Falls) to the water intake, the river can flow backwards. In contrast, when the project generates energy, the opposite happens: water is poured into the middle of the river, river water levels rise dramatically, and the river from the intake to the upstream dam (Vernon Dam, farther away from the intake) can flow backwards. Under both the current and proposed license, pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day. Usual daily fluctuations are more like 4-5 feet... [this] means a far greater horizontal distance, with water sometimes extending up the streambanks, other times not; this width is watered and dewatered repeatedly, day after day. These dramatic fluctuations in river flow, river level, and wetted or dry streambanks threaten higher temperatures and stranding for aquatic organisms in low-water places and times, cause displacement and disorientation during high-flow places and times, and contribute to riverbank and riverbed erosion.

The graph to the right gives some sense of the fluctuations in water level over the last year [2022-3], although this is about 9 river miles upriver from the Northfield intake / outflow, and not all the fluctuations shown here are caused by Northfield. The water level is shown varying from about 9 feet to about 26 feet. The highest levels, on July 11, correspond to this summer’s floods. The daily fluctuations, however, are caused by “hydropeaking”— river flows that vary depending on hydropower production. The hydropeaking shown in this graph comes both from Northfield and several upriver projects, particularly Vernon Dam, the dam directly upstream on the Connecticut River.

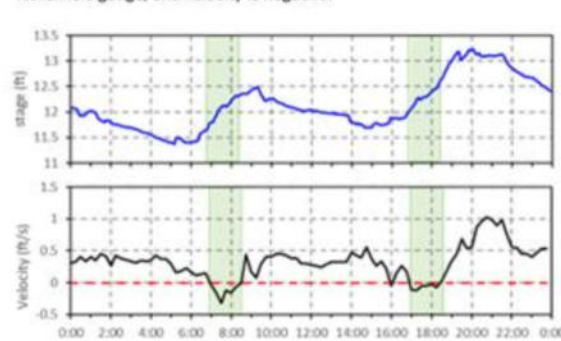


Connecticut River Near Northfield, MA -
01161280



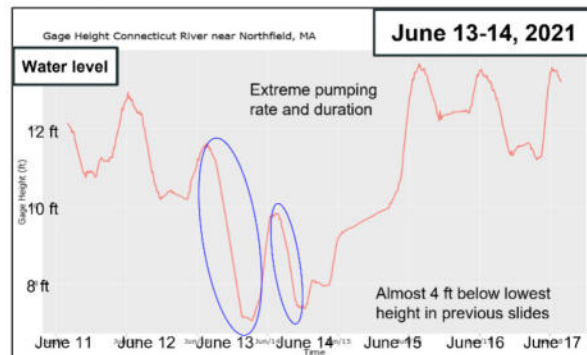
A zoomed-in look at a relatively average few days, such as the last week (Aug 25-Sept 1, 2023, captured Sept 1 at about 9:30 AM), gives some sense of more regular fluctuations. Here the river is going up and down over the course of a few days from 11.5 to 14 feet, so 2.5 vertical feet of variation. At the Northfield intake / outflow location downstream, this [could] be more extreme, likely closer to 5-6 feet in variance.

Nov 3, 2022 - Green bars highlight periods when stage is increasing at Northfield gauge, and velocity is negative.

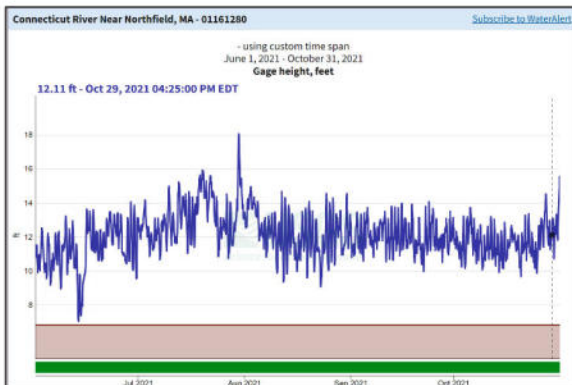


One situation when you can directly see the effect of Northfield, even at the USGS gage 9 miles upriver, is when the velocity actually goes negative at the same time the river level ("stage") goes up. Hydropeaking from the upstream Vernon Dam would cause stage *and* velocity to increase, so this increased stage with *negative* velocity is the effect of Northfield overpowering whatever flow is coming out from Vernon. High generation from Northfield has made the river flow backwards for miles, all the way up to the USGS gage.

In addition to the hydrological impacts documented above, there are others. For example, in June 2021 when the river reached extremely low levels, as documented in the draft WQC, an extended view of the hydrograph at the Northfield USGS gage (see right) shows extreme pumping rate and duration both nights leading up to those low level events



(Slide from: Vogel et al. Hydropower Coffee Hour, July 2021, for CT River Conservancy, <https://www.youtube.com/watch?v=WqeEWZpEpfq>).



Additionally, that summer's hydrograph shows that the impoundment was kept abnormally high for much of July and August, with an especially high spike on July 30. Reportedly there were also problems accessing the reservoir during these months because of high levels.

FRCOG's comments and their consultant's report document the problems of erosion caused by extreme saturation from extended high levels, repeated extreme wetting and drying due to extended and repeated ramping, etc.

•

The draft WQC

neglected to recognize, much less study, assess, and mitigate, the future impacts on water quality of what will almost certainly be an increase in hydropeaking and its impacts during

the terms of the next license. This increase will come because of:

There is likely to be an increase in hydropeaking and water quality impacts in the TF Impoundment over the first 2-3 decades of the new license.

a) Climate change.

Climate change is predicted to bring much more variability in precipitation in New England in the future, causing more frequent and more extreme droughts and floods. This is going to make river flow much more variable. As a result, a) living things in the river will be subject to greater flow fluctuations than historically—and flow directly affects temperature, dissolved oxygen, turbidity, and other water quality factors, and b) more often than now the flow of the river coming downriver will be low and the impact of Northfield on changing levels and velocity will be greater. Climate change will also bring increased summer temperatures and weather variability that will add stress and variability to energy demand, leading to higher demands for the flexibility of storage.

b) The energy transition.

The transition to an energy grid with more variable energy will likely mean far more operation of Northfield pump storage, at least in the first 2-3 decades of the new license before large amounts of other storage, demand response, other flexible resources, and more 2-way transmission to Canada and other regions come on line. Although the development of offshore wind has been delayed by the Trump administration, the energy transition is still expected to unfold over the timeframe of the next license. As large volumes of offshore wind come on, and the region continues to electrify, there will be more price differential in the ISO-NE energy prices, and Northfield will operate more often.¹ This is already being seen with solar. There are now often several hours of pumping on sunny spring afternoons, as prices go very low or even negative from excess solar output; this means many days now with two pump/generate cycles per day. (See also comments from the Alliance for Climate Transition, copied into the FERC docket.)

Note that after about 20-30 years there may *decreased* hydropeaking, as Northfield's operations may no longer be competitive most of the time with other storage and other providers of flexible resources, and operations may diminish significantly, or the plant could even potentially be shuttered if its revenues are not adequate to maintain the plant.

¹See [E3 study for DOER's Charging Forward report](#). NFM needs a price differential of at least about 35% between high daily prices and low daily prices in order to operate profitably, because it uses about 35% more electricity to pump than it generates. Because the marginal fuel for electric generation on the New England grid is usually natural gas, that price differential is not always available. Currently NFM only generates power about 8% of the hours a year (Energyzd 2020, "Northfield Mountain Pumped Storage: Assessment of Contract Benefits in an Increasingly Renewable Region"). It takes about 50% longer to pump the same water, so that means it pumps about 12% of the hours a year. In other words it operates only about 18% of the hours per year. This could go up dramatically as offshore wind comes on line and provides much more opportunity for price arbitrage.

c) More water storage in the upper reservoir (proposed in license application and supported by the draft WQC).

Allowing permanently larger water storage in the upper reservoir will lengthen potential pumping and generation cycles, making longer operation likely for each cycle, and enabling generation on more days of the week, adding considerably more hydropeaking and flow and level fluctuations. Permanently expanding allowable storage in the upper reservoir will mean that a full cycle of pumping and generation at full capacity will take 24 hours rather than the current 20, meaning the potential for nonstop function of the plant which is not currently possible on a daily basis.² Also, currently NF often strategizes to pump more on the weekends when prices are low and generate more on weekdays, but it can run out of upper reservoir storage by Thursday or Friday. More storage in the upper reservoir is likely to enable generation fluctuations for any day of the week that price differentials are available.

d) Mandated storage procurements in the 2024 Mass climate law.

The recently passed 2024 Massachusetts climate law has mandated storage procurements of 5000 MW by 2030 and requires that existing storage shall be eligible. It is unlikely the state will be able to meet this very ambitious storage procurement target without storage procurements of our large-scale existing storage, Northfield Mtn and Bear Swamp, which together have about 1800 MW of storage, of which almost 1200 MW is Northfield.³ We do not yet know what long-term contracts will do in terms of changing operations at Northfield. This will depend on the specifics of the RFPs that roll out in 2026 and later (the 2025 procurement will not include Northfield). But Northfield may well be required or incentivized to operate even outside the ISO-NE market signals⁴, or to bid below market. Operating outside of ISO market signals means generating even when there is not a 35% differential between high and low daily prices. This means more hydropeaking than would otherwise be expected based on b and c above. (See more on market and out-of-market operation below.)

- *Hydropeaking's impacts are inadequately understood and addressed, with minimal plans to remedy this in the F&FP; these inadequacies are largely adopted directly into the draft WQC.*

As explained in our F&FP comments Attachment A), the F&FP did not adequately account for impacts of Northfield Mtn:

² To pass the full volume currently allowed in the upper reservoir through the NF generators at full capacity--in other words, releasing water through generators at maximum flow for maximum generation, all four generators at once--takes about eight hours. That same water going uphill from the river to the upper reservoir through the pumps at maximum capacity takes about 12 hours. With the proposed increase in storage, those amounts will be approximately 9.5 and 14.5 hours, adding up to 24 hours. (We recognize that normally, the plant does not run at full capacity nor use its maximum storage, to retain some reserves for urgent grid needs and/or more profitable price arbitrage, but under the additional allowed storage the normal operations will likely increase proportionately to this maximum possible.)

³ There is a lot of proposed storage in the ISO-NE interconnection queue, but the largest non-PSH storage that is poised actually to come on line soon is the planned Everett battery storage facility of 750 MW.

⁴ This is how the Massachusetts Clean Peak Std works. It incentivizes operation during certain hours during certain seasons, regardless of ISO market signals and grid needs. (The CPS does not currently do a lot of damage to the ISO markets because there have not been a lot of eligible new MW built since its passage.)

In contrast to large improvements planned at Turners, perhaps the biggest gaping hole in the Flows and Fish Passage Agreement relates to hydropeaking in the Turners Falls impoundment (lower Northfield reservoir, i.e. Connecticut River between Turners Falls and Vernon dams). The daily hydropeaking fluctuations from Northfield, Vernon, and tributaries constitute overarching environmental impacts. High pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day, and the river sometimes to flow backwards.

The Flows and Fish Passage Agreement asserts, astonishingly, that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100). FirstLight appears to acknowledge that expanded storage will likely mean expanded operations,⁶ i.e. greater pumping and generation, at the same time again asserting that this will have no effect....

This is patently inadequate. Relicensing studies showed that existing hydropeaking already has a negative impact on fish spawning in the impoundment (FirstLight 2016c). In the statement quoted in the previous paragraph (in Proposed Article B100), FirstLight reveals that we do not have adequate evidence of the impact of hydropeaking on protected, threatened, or endangered species. We have even less information on how current hydropeaking affects habitat and habitat conditions for aquatic species that may not be threatened or endangered, but are resident to the impoundment and contribute important ecosystem services (e.g. native mussels and fishes); and we have still less information on the impact on riparian and floodplain species. Yet the limited fish studies show that there is already significant impact from hydropeaking. Lack of data is inappropriate evidence for this Agreement to say nothing about the range and timing of hydropeaking in the impoundment that may be appropriate to ensure a healthy range and population of native species there.

It also follows from the fish spawning data in the impoundment that increased operations should at the very least be hypothesized to create larger negative impacts on a range of species and habitats. There is inadequate evidence to justify not addressing the potential impacts of increased Northfield hydropeaking that may be enabled by a larger upper reservoir.

In any case, if Northfield is allowed to increase the size of its upper storage reservoir, and/or if its hydropeaking operations significantly increase, the impoundment will be in a condition that is outside the conditions studied within the relicensing studies. There is a... lack of evidence to justify any particular operations plan in these future scenarios.

The draft WQC adds one analysis of hydropeaking to what was provided in the F&FP, and adds a few new provisions on low levels in the TFI. The draft WQC's Appendix B provides two graphs of past and predicted future “exceedance curves.” There is no information on the timeframe of either of these, they address only maximum and minimum levels—nothing on ramping rates or duration, river velocities and fluctuations, seasonality of such fluctuations relative to fish migration or other critical timing, etc.—and there is no provision in the WQC for monitoring to confirm that the asserted predicted no significant effect of adding new storage will not change hydropeaking. For all the reasons listed above, this remains inadequate. We note that FRCOG provided a particularly insightful analysis about the problems and needs for further data and incorporate by reference the details they provided.

The F&FP did have an important provision for monitoring hydropeaking via impoundment levels at the TF dam, mainly for information purposes for recreation, and the draft WQC incorporates these. These are however inadequate to cover the major impacts and information gaps we describe above. Again we incorporate by reference FRCOG's recommendations on this; we also include details in recommendations on Conditions, below.

- *To ensure the project meets water quality standards, the impact of Northfield's hydropeaking impacts must be studied and mitigated; MassDEP must impose additional conditions.*

From our F&FP Comments (Attachment A):

To fully address the impact of Northfield's hydropeaking would require idling or removal of the Northfield Mountain project, or construction of a lower reservoir separate from the river, to create a closed loop system. During the study selection process, the Connecticut River Watershed Council (now the Connecticut River Conservancy) requested a study to look at these options, but FERC rebuffed the need. The Flows and Fish Passage Agreement appears to have no consideration or analysis of a decommissioning, removal, or idling option, even for future scenarios when this project may no longer be a cost-effective resource for the New England electric grid.

There are also ways to address the impact of hydropeaking through mitigation, e.g. reduced flow and level alterations in the impoundment during fish migration or emergence seasons, or a system like that at Cabot that maintains a closer percentage to NRF or allows a reduced amount of variation.... Unavoidable impact could be addressed through off-site mitigation, commensurate with the impact of hydropeaking.

...if Northfield is allowed to increase the size of its upper storage reservoir, and/or if its hydropeaking operations significantly increase, the impoundment will be in a condition that is outside the conditions studied within the relicensing studies. There is a complete lack of evidence to justify any particular operations plan in these future scenarios.

B. Needed added conditions:

More specifically, **the following are needed to ensure Northfield Mtn operations meet Massachusetts water quality standards.**

1) *Studies, data, and adaptive management.*

All of these go beyond the studies and data called for in the WQC:

Baseline and periodic monitoring, assessment and evaluation of

- **(a)** the hydrological impacts of Northfield Mtn hydropeaking (including magnitude, duration, frequency, and seasonality of water level ramping, and resulting changes in velocity);
- **(b)** robust investigation of the impacts of these on aquatic life, riparian areas, invasive species, and erosion/sediment as well as other water quality indicators;

Future modeling of

- **(c)** Changes in hydropeaking and water quality impacts based on climate change and predicted changes in the electric grid and markets, and
- **(d)** The impacts of these on water quality building from the empirical studies of parts a and b;

(e) Adaptive management protocols that can impose operations restrictions based on this information, if necessary to protect and enhance water quality.

2) Operational restrictions

Until these studies can be completed, operational restrictions should ensure limited impact where causation and impacts are poorly understood. Restrictions should be placed on:

- minimum *and* maximum levels in the Turners Falls Impoundment (TFI),
- *extended durations or high frequencies of high-volume pumping or generation*, especially during seasons of sensitivity of aquatic life (e.g. fish migration seasons), with carve-outs for urgent grid needs such as scarcity conditions, provided there are also requirements for mitigation for any exceptional impacts at such times.

Finally, there is a significant chance that as the grid changes, other more economical battery storage, demand response, and long-distance transmission and localized distributed system-based flexibility will come on line. Well within the term of a 50-year license there is a good chance Northfield Mtn will simply no longer be economical to operate. If so, we risk having a stranded asset with no operator and no mitigation, with no funds to decommission the project and terminate the need for further water quality mitigation.

3) Decommissioning funds.

To ensure the project meets water quality standards for the full life of the license, Mass DEP must require set-aside funds for decommissioning once the project is no longer economical. The Connecticut River Conservancy provides extensive discussion of the appropriateness of this in their comments. See also [American Rivers](#) on the practicalities of decommissioning including its high costs, which are often stranded costs with longlasting water quality impacts, with both decommissioning and mitigation costs falling to taxpayers.

5. **Endangered Short-Nose Sturgeon must be included** in all fish-related studies and, as appropriate, effectiveness testing related to fish passage.

2. Monitoring data, including historical data, must be robust, scientific, regularly produced, and publicly available

Closely related to point #1 above, monitoring data must be robust, scientific, regularly produced, and publicly available. Historical data must be made available.

As we explained in our comments on the F&FP:

Given the proposal for a 50 year license, there is tremendous need for ongoing publicly available data, for monitoring and assessments as new measures are implemented or as conditions change, and for adaptive management to alter operations and practices as new information arises. The Flows and Fish Passage Settlement Agreement has very valuable provisions in place for effectiveness testing of a number of measures, and a suite of planned adaptive management measures (AMMs). However, there is a lack of data, monitoring, and planned adaptive management in a host of other areas. There is inadequate evidence to justify these deficiencies. This is especially true for a license that will continue into the next several decades, when climate

change and an energy transition are accelerating, and are likely to fundamentally alter the conditions under which these plants operate within this half-century timeframe....

Public data on Turners Falls impoundment levels at the Turners Falls dam will be a major added beneficial source of data. Among other things this could enable empirical studies that can correlate hydropeaking and impoundment levels with fish, hydrological, geomorphological, ecological, and recreation / use outcomes. However, it appears there is no plan to conduct such studies. As quoted above, the Flows and Fish Passage Agreement asserts, based on a single erosion modeling study, that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100). Based on this conclusion, there appear to be no requirements for monitoring the effects of increased use of the pumped storage station on fish passage; on endangered, threatened and protected species; on macroinvertebrate populations or other indicator biota; or on other environmental parameters—much less a plan for adaptive management in case negative impacts should be found. Yet the few studies performed, including the fish spawning study, already show negative impacts at present. This lack of a data, monitoring, and adaptive management plan in the impoundment is manifestly inadequate.

Similar publicly available hourly data on Northfield pumping and generation will be crucial to assess impacts of Northfield Mountain operations. Yet this does not appear to be contemplated. Additionally, data from Vernon flows, if made public, would be similarly useful. Concerning the Vernon data, it appears that this will mainly be used internally by FirstLight in order to calculate NRF and provide for dampened flex or peaking releases from Vernon. It is not clear whether this Vernon flow data will be made public. Its usefulness for monitoring and adaptive management will be much less if not.

We note that FRCOG provided a particularly helpful list of some of the needs for further data and incorporate by reference the details they provided. More generally

- *The Special Conditions providing for data, monitoring, a website, and quarterly reports must make these publicly available, with searchable historical information that can inform studies of trends and comparison.*

3. Endangered Short-Nose Sturgeon must be included in all fish-related studies and, as appropriate, effectiveness testing related to fish passage

The Draft WQC has extensive discussion of sturgeon and calls for consideration of sturgeon in a number of places. However, almost none of these are included in the WQC’s Special Conditions, which makes the calls for consideration unenforceable. We provided brief comments to FERC on the needs for a full Section 7 consultation since the emergence of new eDNA data showing the presence of sturgeon in the TFI and even above Vernon Dam (Attachment D). The primary points we made in that letter apply also to the need to consider this highly sensitive use under the WQC:

1. There needs to be public input, especially of the states and the tribes—and that includes both downriver and upriver states and tribes, whose sturgeon populations will be impacted for decades by the operations of FirstLight’s projects and the Conditions Mass DEP sets.
2. Analysis across relevant geography and time.
3. Needs for data, monitoring, assessment, and potential adaptive management during the license term.

We ask you to read Attachment D to understand our full conception and rationale.

4. MassDEP must require public participation opportunities and facilitation and technical support for consultations with federal and state recognized tribes

MassDEP is an agency within the Executive Office of Energy and Environmental Affairs. As such it is required to follow the EEA Environmental Justice Strategy, which calls for consultation with federal and state recognized tribes, and for state agencies to actively support participation. This needs to be written into the Conditions of the WQC.

Changes needed in the WQC Conditions based on the above:

Special Condition 10 (and 11).

Maximum and minimum levels: The range should be 179 to 184. See specific suggestions in comments from FRCOG. Exceptions are excessive and should be limited to times specifically listed in the Condition, or when the grid has scarcity or near-scarcity events. Exceptional impacts at these times must be monitored and mitigated.

Velocity fluctuations must be monitored below the Northfield intake and also at the USGS Northfield gage, and their impacts assessed. Until impacts can be demonstrated to have minimal impact, Northfield Mtn shall not be operated so as

- Not to cause negative velocity in either location during upstream or downstream fish migration seasons.
- Additional restrictions should be added for rate and duration of pumping and releases
- This restriction may be excepted at times specifically listed in the Condition, and during grid scarcity or near-scarcity events. Exceptional impacts at these times must be monitored and mitigated.

These tighter restrictions must be maintained until demonstrated through careful and robust analysis that there is no significant impact on sensitive aquatic life, erosion, and other factors (see 1B, above).

Special Condition 12.

The flow notification website and quarterly reports must be explicitly required to be available to the public, and to provide historical data and searching capabilities. Delays of historic data release could be allowed to protect proprietary information on operations.

Special Condition 13.

Use of extra storage in the upper reservoir should be permitted only during grid scarcity and near-scarcity events or in anticipation of ISO-identified extended weather stress such as extended cold winter weather.

See F&FP discussion of upper reservoir storage.

Special Conditions 14-17.

Sturgeon need to be added explicitly to these conditions.

Fish passage in and through the TFI must be addressed. We suggest FirstLight be required to propose fish passage improvements or mitigation as part of their hydropeaking impact study, and implement them by year 7, and undertake adaptive management as needed at year 12.

Special Condition 26.

The water quality plan must also include biological indicators including:

- fish spawning, rearing, and migratory success in and through the TFI
- endangered, threatened and protected species;
- macroinvertebrate populations or other indicator biota

This water quality plan must also be linked to the data and monitoring of the impoundment (Special Condition 12) to provide for robust study of the impacts of hydropeaking (see 1B p. 8.)

Special Condition 27.

The invasive species management plan must study and mitigate for the impact of hydropeaking. Additionally, this should be linked to the data and monitoring of the impoundment (Special Condition 12) to provide for robust study of the impacts of hydropeaking (see 1B p. 8.)

Special Condition 28.

The riparian management plan must study and mitigate for the impact of hydropeaking. Additionally, this should be linked to the data and monitoring of the impoundment (Special Condition 12) to provide for robust study of the impacts of hydropeaking (see 1B p. 8.)

Special Condition 29.

The sediment management plan should be linked to the data and monitoring of the impoundment (Special Condition 12) to provide for robust study of the impacts of hydropeaking (see 1B p. 8.)

Additionally, this plan should consider natural fluvial-geomorphic processes and their impairment and the impact on habitat maintenance and dynamic creation.

Finally, see FRCOG's comments on this and other studies on the crucial need for modern scientific methods and data. These are essential. Among other things it is also essential that the USGS gage at the Route 10 bridge is funded for the duration of the license.

Special Condition 31.

Climate change's impacts on fish will go well beyond potential changes in the seasonality of migration. This should be a robust study that includes such considerations as low flows and elevated temperatures, as well as wider biotic community changes.

Special Condition 35.

MassDEP must require the licensee to contribute to a decommissioning fund so that Northfield Mtn does not become in the future more nimble grid an expensive stranded asset whose impacts and decommissioning fall fully onto the Commonwealth's taxpayers.

Special Condition 36.

MassDEP must require the licensee provide periodic outreach materials and notifications to federally and state recognized tribes, as well as to the states of Vermont, New Hampshire, and Connecticut; and contribute to a fund to facilitate and provide support for consultation with tribes.

Eve Vogel
Associate Professor
UMass Energy Policy & Rivers / Energy Geographies & Politics Project
Department of Earth, Geographic, and Climate Sciences
UMass Amherst

TO:

Tom Ferguson, Ph.D.
Energy Storage Programs Manager, Renewable and Alternative Energy Division
Massachusetts Department of Energy Resources

RE: Mid- and Long-Duration Energy Storage Strategy Study

Dear Dr. Ferguson,

Please accept these comments on the Mid- and Long-Duration Energy Storage Strategy Study.

I lead the UMass Energy Policy and Rivers group, part of the UMass Energy Geographies and Politics Project. The UMass Energy Geographies and Politics Project consists of professors, student researchers, and alumni who work on electricity policy, markets, politics, sustainability, and environmental justice. The UMass Energy Policy and Rivers group brings special expertise on energy markets and policies related to hydropower and rivers, and related river and community impacts, policy, and regulatory processes. In the Energy Policy and Rivers group I also work with a river NGO advisory group who help guide on issues and interface with clean energy policy in Massachusetts and beyond.

I attended the second stakeholder session, reviewed the enabling legislation, commented on and read the RFP, and read the written comments that came in during the development of the RFP. Having seen the August presentation to stakeholders, my comments in this document are not primarily on the study thus far but rather the policy implications to come. In addition to broad comments on policy coming out of the E3 presentation, I have specific concerns about recommendations in relation to pumped-hydro storage. By extension, I offer some thoughts on how the Commonwealth could begin to weigh and approach the broader environmental, social justice, and cost considerations of various storage technologies and their alternatives. Finally, I added a section reiterating some key points that Regine Spector and I made in our comments on the Study as you were developing your RFP, considerations that are unfortunately absent from this study thus far.

A. General policy implications from the storage study.

1. The data and graphs presented by E3 show very clearly that medium- and long-duration storage have a strong role to play in a future energy transition and grid for Massachusetts and New England. The ability to reduce net peak load on the system from a predicted 50 GW or so to something more like 30 GW would be a major benefit to the region and the climate. This is good news in comparison to the Clean Energy and Climate Plan for 2030, which, as your RFP notes, “did not call for deployment of mid- and long-duration storage and rather models the New England region as relying on continued usage of natural gas-fired generation for firming and balancing applications.” ***The Commonwealth and New England will be well-served by carefully crafted regulations, investments, and/or incentives related to medium- and long-duration storage.***

2. The consultants note that during winter reliability events when wind and solar are low for over a week, storage may need to be charged with fossil fuels. Given the fact that all storage is a net consumer of electricity, it will be important for the consultants to calculate what the net GHG emissions would be if storage is deployed during such periods (obviously it will depend on the efficiency of different technologies—and, as the consultants point out, the existing grid context), versus the business-as-usual option we have now of occasional very dirty, and problematic in terms of EJ, peaker plants being brought on line. ***Any kind of incentive program from the Commonwealth related to the use of storage for winter reliability must have the ability to provide nuance that will result in the lowest possible GHG emissions and EJ (especially health) impacts from peaker plants under different weather scenarios, grid contexts, and storage technologies.*** Existing policies like the RPS (clean peak) and PPA procurements might not be able to have that nuance without significant modification. This may be a context in which DOER, the Massachusetts AG's office, and NESCOE need to work carefully with NEPOOL and ISO for market changes (e.g. a carbon price); or it may be a context where markets simply will not give an adequate signal, and DOER and DPU should consider a regulatory approach, perhaps paired with procurements. More on this below.
3. In the stakeholder session Q&A, E3 made a very interesting observation: in their models, load flexibility could play the same role as storage. The policy implication is clear: ***the Commonwealth should find ways to incentivize load flexibility even more than storage, whether with similar instruments or entirely new ones.*** Load flexibility should come first over storage because: a) it does not cost additional net electricity consumption; and b) it will reduce the overall environmental and social impact because it generally requires less resource-intensive deployment of infrastructure or operational impacts compared to storage. Among load flexibility goals, one key one should be ***demand reduction***. This is different from efficiency and conservation and needs to be much more firmly and widely supported by the Commonwealth, as it has wide environmental and social benefits beyond GHG reduction.
4. The study suggests clearly that there may be justification for at least three kinds of storage incentives:
 - Procurements for new storage technologies and infrastructures of varying durations (medium, long, and longer) that could not otherwise get into operation, to cover their initial capital and other costs. The consultants and DOER should make sure, however, that any ratepayer-subsidized procurements are actually needed. Given E3's analysis that different durations of storage will be needed in successive times and tranches, any procurements should be timed accordingly. (A colleague looked at the interconnection queue and suggests there is plenty of storage ready to come on line and incentives may not be needed? Is some of this medium or long duration?—perhaps what is still most needed is help with that queue, and regional transmission planning?)
 - Extending the clean peak standard to cover storage for more than 4 hours—again, *if and when* this is needed. ISO energy market price differentials are already doing a good job handsomely rewarding storage when it is especially valuable to the grid. The E3 study suggests these rewards may increase sharply without further incentives as off-shore wind is built (at least at first; see next bullet). (See section B of this document.)
 - A storage capacity market beyond the existing ISO-NE capacity market. Based on the E3 August presentation, it appears that this may be especially important once each tranche of storage roles out (medium, then longer, then longer...) saturates the market, and prices diminish (including for

regulation and reserves markets, etc.). At some point there may come a time that it is difficult for each duration of storage to earn enough to stay in operation. Given the critical importance of storage suggested by the E3 models during peak seasons and reliability events, the region will need to have excess storage capacity, for multiple durations of storage. A storage-specific capacity market (or perhaps an effective load carrying capability (ELCC) market??) may be the role of ISO-NE, not Massachusetts, but this study could be used to inform ISO-NE's deliberations on how to deal with storage.

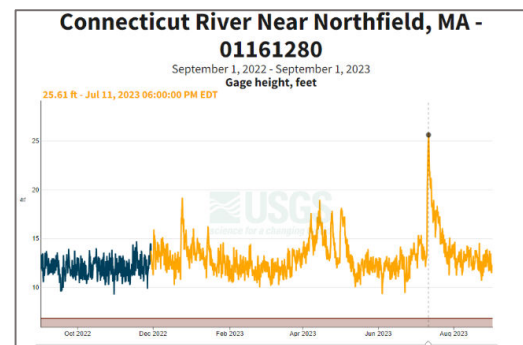
B. Recommendations in relation to pumped-hydro storage, especially Northfield Mountain

Background: Pumped-hydro storage and river fluctuations

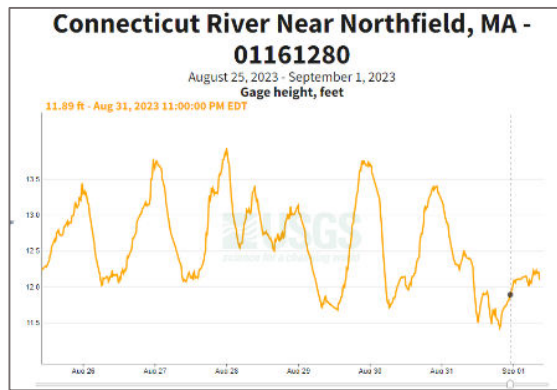
E3's models suggest strongly that the largest existing supply of energy storage in New England, pumped hydro storage, is going to play an important role in the future of New England's energy grid and the energy transition. Both Northfield Mountain and Bear Swamp projects are rated as medium-term under the study definition (8 and 6 hours, respectively), although Northfield might qualify as long-term if its next license allows it to store additional water in its upper reservoir. Together they and the tiny Rocky River project in Connecticut provide about 1800 MW of pumped hydro storage capacity for the New England grid. This is only about 10% of what Massachusetts may eventually need according to E3's models, which means probably about 5% of the region's future needs. Based on this, these projects can certainly not solve the future supply and reliability problems; however, their contributions will be valuable for some time, especially on the early edge of offshore wind development, and continuing until the projected future when storage markets start to saturate. And even then, they may well be worth keeping on line for reliability events.

However, these open-loop pumped storage projects use Massachusetts rivers as their lower "reservoir," and because of this, they have profound environmental impacts. Every time they "charge" (pump) they suck up large volumes of river water, causing river levels to drop. They have the ability to suck up more water flow than the entire river sometimes provides. When this happens, from the downstream dam (Turners Falls) to the water intake, the river can flow backwards. In contrast, when the project generates energy, the opposite happens: water is poured into the middle of the river, river water levels rise dramatically, and the river from the intake to the upstream dam (Vernon Dam, farther away from the intake) can flow backwards. Under both the current and proposed license, pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day. Usual daily fluctuations are more like 4-5 feet. Understand that 9 vertical feet, even 4-5 feet, means a far greater horizontal distance, with water sometimes extending up the streambanks, other times not; this width is watered and dewatered repeatedly, day after day. These dramatic fluctuations in river flow, river level, and wetted or dry streambanks threaten higher temperatures and stranding for aquatic organisms in low-water places and times, cause displacement and disorientation during high-flow places and times, and contribute to riverbank and riverbed erosion.

The graph to the right gives some sense of the fluctuations in water level over the last year, although this is about 9 river miles upriver from the Northfield intake / outflow, and not all the fluctuations shown here are caused by Northfield. The water level is shown varying from about 9 feet to about 26 feet. The highest levels, on July 11, correspond to this

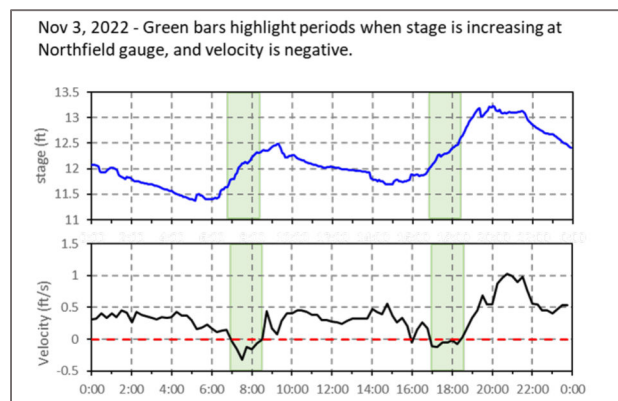


summer's floods. The daily fluctuations, however, are caused by “hydropeaking”— river flows that vary depending on hydropower production. The hydropeaking shown in this graph comes both from Northfield and several upriver projects, particularly Vernon Dam, the dam directly upstream on the Connecticut River.



A zoomed-in look at a relatively average few days, such as the last week (Aug 25-Sept 1, 2023, captured Sept 1 at about 9:30 AM), gives you some sense of more regular fluctuations. Here the river is going up and down over the course of a few days from 11.5 to 14 feet, so 2.5 vertical feet of variation. At the Northfield intake / outflow location downstream, this would be more extreme, likely closer to 5-6 feet in variance.

One situation when you can directly see the effect of Northfield, even at the USGS gage 9 miles upriver, is when the velocity actually goes negative at the same time the river level (“stage”) goes up. Hydropeaking from the upstream Vernon Dam would cause stage *and* velocity to increase, so this increased stage with *negative* velocity is the effect of Northfield overpowering whatever flow is coming out from Vernon. High generation from Northfield has made the river flow backwards for miles, all the way up to the USGS gage.



Beginning with the new license (expected 2024 or 2025) and increasing over the next few decades, Northfield Mountain is likely to cause greater, longer, and more frequent fluctuations in water flow and level in the Connecticut River.

This is because:

- (a) The proposed license would allow a larger volume of upper-reservoir storage. The upper reservoir is the artificial lake built on top of Northfield Mountain, that holds the water the Northfield project pumps up from the river, and then later releases. The volume that FirstLight is allowed to store in the upper reservoir is the maximum amount of water the project can store and then release. More upper-reservoir storage will mean an increased length of time Northfield can generate from stored water—extending the current 8 hours it can run at its full capacity to a longer duration, likely exceeding the 10 hours needed to be defined as “long duration” storage under this Study’s definitions. At the same time, the physical-hydrological analog of this greater energy storage duration is longer durations of both pumping and release flows, i.e. greater fluctuations in river levels (as well as upper-reservoir levels).

- (b) As E3 show, once variable generation like wind and solar become a larger part of the grid, especially off-shore wind, greater variability in ISO market prices will incentivize increased use of storage. Northfield uses about 30% more energy from the grid than it produces so it needs about a 30% price differential to be able to store and release profitably. As the daily price highs and lows become more extreme, Northfield may well end up either pumping or generating most hours of the day in the summer and winter, when E3 models show demand and supply with significantly different timing in daily peaks. This means greater and more frequent fluctuations in river levels.
- (c) Regulatory and legislative initiatives in New England states to incentivize energy storage beyond the ISO markets, including the Massachusetts Mid- and Long-Duration Energy Storage Strategy Study, could result in additional incentives for FirstLight to operate Northfield a larger number of hours outside of when it is profitable under the current ISO market structure. If so, these state-based initiatives will extend this hydropeaking further.

FirstLight's commissioned Energyzt 2020 study: A critique

In a 2020 study commissioned by FirstLight, "Northfield Mountain Pumped Storage: Assessment of Contract Benefits in an Increasingly Renewable Region," Energyzt Advisors, LLC, argued that "if Northfield is contracted to provide a guaranteed amount of energy into the day-ahead energy market during high-priced hours each day as opposed to operating as a merchant plant," the region would benefit from carbon emissions reductions, peak price shaving and reductions in cost to load, improved energy security during the winter months, and fast-ramp capability that increasingly will be required for reliability.

More recently, FirstLight quoted that study in its written comments as you were developing the RFP for the Mid- and Long-Duration Energy Storage Strategy Study, saying: "In a study published by Energyzt, LLC in June 2020 (included below), the firm concluded that operating just two of Northfield Mountain's four units more frequently would produce more than \$410 million in consumer savings between 2022 and 2030. Additionally the same regimen would reduce carbon emissions by an average of 180,000 metric tonnes annually."

It appears from the study and these comments that FirstLight is poised to recommend that the Commonwealth consider a PPA procurement for Northfield to enter noncompetitive bids into the ISO-NE day-ahead market, 365 days/year. Because this is based on the Energyzt study, it is worth taking a moment to review the study.

Simply put, the Energyzt Study is based on several flawed assumptions, suspect inferences, and incorrect conclusions. Here is a summary of some of the problems in this report. I am happy to detail more if needed.

1. The Energyzt report states that the Northfield capacity factor is 8 percent, suggesting that this is terribly low. However, given the fact that Northfield needs to pump for approximately 12 hours at full power to generate approximately 8 hours at full power (its longest duration at full capacity), its maximum possible capacity factor is about 40%. A low capacity factor is normal for storage. (Hence, presumably, E3's use of ELCC instead of capacity factor.) Indeed, [the EIA says that capacity factors for pumped storage around the country range from about 8% to 17%](#). The same EIA page shows that use of pumped hydro storage is especially low in the spring and fall when demand is generally less. Northfield is on the lower end of this range not because something is wrong, but because on the

New England grid, we rely on gas as our marginal resource most of the time. Much of the time the marginal resource at both low and high price points of the day is gas, and hence the price differential that would make it economical for Northfield to operate simply isn't there. That also means, however, that the most cost-effective resource to generate is not pumped hydro.

2. The Energyzt report states that having Northfield bid into the day-ahead market more, even outside of ISO energy market signals, will lower GHG emissions, and also improve system reliability and security. This is highly unlikely. Of course bidding into the DA market would not necessarily change anything about actual energy use (see #4). But if it did result in changed use out of energy market signals, using Northfield more will not produce more wind or solar energy. Those are currently limited by their absolute volumes on the grid; and their growth—especially that of off-shore wind, which as E3 shows will be the game-changer for the region, is slowed by other factors, like siting, transmission, and interconnection delays. It is likely true that if Northfield consumed more energy during low-demand hours, that a larger portion of that consumed grid energy would be nuclear energy, since in lower-demand times the steady supply of nuclear is a larger portion of the total. But even at those times, the marginal resource is usually gas—and thus it would be gas that would need to be burned in greater amounts to generate the power that Northfield would consume. Then, at the higher demand times when Northfield generated outside of ISO market signals, Northfield would displace mainly... gas generation. Perhaps Northfield would displace somewhat less GHG-intensive gas while using more GHG-intensive gas. But, it would consume about 30% more energy than it produced while it did this. The net result will not benefit GHG emissions.

There are of course times when Northfield is an incredibly important resource that can displace very high GHG emitting resources like oil. But, those resources are expensive, and Northfield already gets strong market signals to perform at such times. Northfield additionally can provide fast reactions, pumping or generating in a matter of minutes, to stabilize the grid. Both strengths were in evidence, for example, on December 24, 2022, when there was a scarcity event. [As FirstLight's CEO exclaimed proudly](#), Northfield (and other hydro) was a significant contributor to providing reliability—and probably displaced some of the oil that might have been burned. There is no public reporting on the revenues generated by such events but [an ISO-NE report on the event](#) shows that energy and ancillary market prices spiked steeply. It is likely that FirstLight earned millions of dollars in a few hours on that single day; existing ISO-NE market signals did their work well.

When in the future there is ample off-shore wind on the grid, daily low and high prices will diverge. Then, Northfield will operate more—based on ISO market signals, fulfilling exactly the role that the Energyzt report extols. It does not need a Massachusetts contract to do this.

3. The Energyzt report claims that having Northfield bid into the Day-Ahead market outside of ISO market signals will also decrease cost to load and therefore energy cost to the region. This would seem to assume that Northfield will bid low enough into the DA market that it will shift the marginal resource on the grid during the times Northfield is generating. However, this does not take into account the cost of the contract to pay Northfield to do this, which should be subtracted from any cost that benefits the region. It should also be noted that if this actually worked, Energyzt is proposing that Massachusetts ratepayers subsidize those of the other five New England states. The claim also does not take into account the real-time market, when settlement happens—and which might be distorted by Northfield's out-of-market bids and operation. Finally, it does not take into account the fact that if this worked, it would be distorting the competitive energy market to lower prices at times of supply scarcity, when otherwise higher prices should signal a reduction in

consumption. There is a risk of actually increasing consumption because of this distortion. In short, there is a reason that Northfield should not operate when it's not able to do so according to the ISO energy markets: it's not getting the price signal it needs because there is another resource on the grid that can operate more cost-effectively. Massachusetts ratepayers should not pay it to do otherwise.

Policy implications: Pumped hydro storage

In terms of the three policy implications described in Part A, the above analyses suggest:

- There is no justification for a PPA procurement for pumped storage hydropower. It should be noted that this also applies to the suggestion in FirstLight's comments to you as you were developing the study that, "we recommend that Massachusetts closely examine pairing the operation of existing grid-connected energy storage with large-scale offshore wind projects. Such a pairing will enable the Commonwealth to deliver offshore wind when the region, the system and consumers need it most, not limited to periods when the wind is blowing.... [T]here are already more than 1,800 MW of installed energy storage resources capable of pairing with offshore wind facilities the moment the wind generation comes online." Yes, that storage is capable and ready, and will be highly useful once the off-shore wind comes on line. It will be signaled appropriately by ISO-NE energy markets and financially rewarded to extend out the timeframe when that wind benefits the region. Subsidizing pumped storage hydropower further with a contract, however, will neither speed up the wind installation nor improve its use. And, it would mean the Commonwealth's ratepayers would be paying for the same wind twice: once from the wind energy procurements and again when a pumped storage hydro facility is paid to store that wind.
- The clean peak standard will only apply to pumped storage hydro if Northfield is permitted to expand its upper reservoir and the Commonwealth considers this "incremental." If part of what comes out of this study is that the clean peak standard is expanded so longer-duration storage becomes more valuable, DOER should carefully analyze whether this will incentivize greater pumping and generation at Northfield. If so, ***Northfield should be required to fully mitigate—offsite if necessary—the incremental environmental harm to the river.*** If this is too difficult for DOER to add to its policies, then Northfield could be required to pay a percent fee that could become a fund for mitigation.
- The ISO-NE capacity market functions to help keep relatively low-earning generation projects that are necessary for occasional generation on line. Once off-shore wind comes on line, pumped storage hydropower is expected to become high earning. For now though, and in the more distant future once other storage is developed, it is important for Northfield to continue to earn revenue from the capacity market to stay on line for the times it is truly needed. Based on its relicensing applications, Northfield gets ample profit to stay in business for the foreseeable future, although its revenue from the capacity market is expected to decrease. There may be a justification at some point for a storage capacity market to supplement the existing capacity market.

Expanding out more broadly, this view of pumped storage hydropower shows that not only the deployment of this storage technology, but also its changing operational use, has significant environmental impacts. I have not even touched on it above, but changing operations, their environmental impacts, and the financial repercussions, also have broad social impacts: impacts on Native American groups with cultural and historic resources, recreational users, fishers—including fishers up and down the river who supplement their food security with migratory fish that pass through the

Northfield portion of the Connecticut River, the erosion of riverside property owners' lands, access to the river and riverbanks, fiscal implications for local towns, and more. If Massachusetts policy subsidizes increased use of storage, it is subsidizing impacts on all of these. This is of course while your sister agencies are spending other state resident dollars to protect these resources and users.

For this reason, if Massachusetts is to provide incentives for storage, these impacts need to be accounted for in your calculations, your analyses, and your policy. (See also below.)

C. Broader implications: Recommendations

The analysis above about pumped storage hydropower and Northfield in particular point towards ways the Commonwealth could begin to weigh and approach the broader environmental, social justice, and cost considerations of various storage technologies and their alternatives. No storage technology has zero impact, any more than does any generation.

To ensure benefit to the Commonwealth, MassCEC, DOER, and EEA must consider ecosystem impacts and environmental justice implications of all storage options, and include input from stakeholders from local communities. Different technologies have different impacts on local environments and communities. It is crucial that the study develop a list of potential technologies and likely *locations* for development or changed use, provide that information to local stakeholders and EJ groups, and hold hearings that are both local (accessible in person) and have remote options.

These significant “costs” (and some benefits) are not included in traditional economic analysis and should be included in the study report—much as I have begun to do above for pumped storage hydropower at Northfield Mountain. These kinds of interconnections were well recognized in the 2022 Act’s provisions on wind energy. These must inform the policies that come out of the report as well.

D. Other general points absent from the storage study.

This section reiterates a couple points not covered above that Regine Spector and I made in our comments on the Study as you were developing your RFP, considerations that are unfortunately absent from this study thus far.

1. The study must consider new and diverse storage technologies and alternatives, not only medium and long-term energy storage. As the now 6-year-old State of Charge report showed, there are many new technologies that offer a wide range of storage options. Additionally, other technologies such as demand response, conservation, and distributed storage (e.g. car batteries) may provide some of the benefits of large-scale and medium- and long-duration storage. Many of these technologies will become even more beneficial in a future of potentially dramatic growth in availability of smaller-scale and distributed energy such as electric cars, busses and transport vehicles, battery walls, and smart grid-enabled metering and price signals. A narrower study focusing on current options and medium- and long-term storage risks recommendations that will keep existing long- and medium-duration storage, which are primarily pumped storage facilities that have dramatically changed the Connecticut and Deerfield Rivers, artificially competitive, possibly obstructing more creative and resilient decarbonization pathways.

2. Overall the goals of this study, and any policy that arises from it, should be:
 1. Contribute to rapid decarbonization in Massachusetts and beyond
 2. Limit over all ecological and social-justice impacts, in Massachusetts and beyond
 3. Limit long-term ratepayer and taxpayer cost
 4. Make tradeoffs visible and comprehensible, and provide for robust participation, to democratize the energy transition
 5. Ensure that expenditures of ratepayers or taxpayers through storage incentives are accountable to public purposes over time
 6. Support other energy system goals including resilience (which may be achieved e.g. through diversification and the development of distributed energy)
 7. Allow for “adaptive management,” i.e. changing programs and incentives as technologies, grids, and other factors change

Thank you so much for all your thoughtful care and attention to this Study, and to the Commonwealth.

Sincerely,



Eve Vogel
 Associate Professor
 UMass Energy Policy & Rivers / Energy Geographies & Politics Project
 Department of Earth, Geographic, and Climate Sciences
 UMass Amherst

Energy Policy and Rivers group, Energy Geographies and Politics Project
 RiverSmart Communities
 Department of Earth, Geographic, and Climate Sciences
 UMass Amherst
 Amherst, MA 01003

TO:

Debbie-Anne Reese, Secretary
 Federal Energy Regulatory Commission
 888 First Street, N.E.
 Washington, D.C. 20426

December 20, 2024

RE: Notice of revised procedural schedule for environmental impact statement for the proposed project relicenses for Bellows Falls (FERC No. 1855), Vernon (FERC No. 1904), Northfield Mountain (FERC No. 2485), and Turners Falls (FERC No. 1889) projects

Dear Secretary Bose,

I write as the director of the UMass Energy Policy & Rivers group, which is part of the UMass Energy Geographies and Politics Project; and as codirector of UMass RiverSmart Communities. Previously I submitted comments to FERC on the application for relicensing of Northfield Mountain (FERC No. 2485), and Turners Falls (FERC No. 1889) projects. The comments provided in this letter are in addition to those prior comments, based on new additional data. I additionally submit these comments to the dockets for Bellows Falls (FERC No. 1855) and Vernon (FERC No. 1904) projects as those are also affected by this new information.

The new information is that there is scientific evidence of Shortnose Sturgeon, a species listed as endangered under the federal Endangered Species Act (ESA), between Turners and Vernon Dams, and between Vernon and Bellows Falls Dams. (See letter from the Connecticut River Conservancy that details the study and data found.) Additionally, there were at least two documented strandings of shortnose sturgeon below Turners Falls Dam in summer 2024. In previous studies and in the project license applications, the upper end of the habitat range of shortnose sturgeon had been said to be Turners Falls Dam. Also, it was believed that sturgeon did not much use the stretch of the Connecticut River just below Turners Falls Dam, and the 500 cfs minimum flows proposed in that reach in the Flows and Fish Passage Settlement Agreement would not cause take to the species. The new information provides counterevidence to both of these claims.

This strong new evidence of the wider geographic range of shortnose sturgeon, and also its vulnerability to low flows below Turners Falls dam, require that FERC do a full ESA Section 7 consultation that takes into account this new evidence. The National Marine Fisheries Service, and the US Fish & Wildlife Service as appropriate, must reevaluate the appropriate geographic range for the designation of critical habitat for shortnose sturgeon, assess whether the proposed federal

licenses will jeopardize the species' continued survival and recovery, provide conditions for an incidental take permit, and provide any needed Reasonable and Prudent Alternatives to ensure the survival and recovery of this species for the full license term.

The agencies must keep in mind three keys for this consultation process: (1) Public input, especially states and tribes; (2) Analyses across relevant geography and time; and (3) Needs for data, monitoring, assessment, and potential adaptive management during the license term

1. Public Input , especially states and tribes

FERC and the responsible agencies will need to provide for public input on the Section 7 consultation, both before the consultation about what is needed to conduct the consultation, and after, for review of a draft Biological Opinion or Letter of Concurrence.

To get full appropriate input, FERC and the responsible agencies will need to explicitly solicit recommendations from state fish and wildlife agencies. These solicitations should include state agencies that may not have been consulted about shortnose sturgeon previously, including Vermont, New Hampshire, and Connecticut. Vermont and New Hampshire have jurisdiction over the river upriver of Vernon Dam, where shortnose sturgeon eDNA has recently been found. As well, the populations of shortnose sturgeon in Vermont, New Hampshire, and Connecticut are all potentially affected by the extreme difficulty of migration from below Turners Falls Dam to above Vernon Dam, and by the low reproductive ability of this listed species in the impaired (and sectioned-off) critical habitat throughout this area of the river.

The federal agencies must also solicit recommendations from federally and state recognized Indian tribes with historic and cultural properties and traditional uses of shortnose sturgeon, and from experts on traditional cultural and historic uses and places related to this ESA-listed species. Because these groups may have limited experience engaging with ESA consultations in such complex proceedings and habitats, it will be important for the federal agencies to provide technical support and facilitation for these tribal representatives to participate and to complete well-informed recommendations.

2. Analyses across relevant geography and time

Federal agencies will need to analyze the full suite of information needed to provide for survival and recovery of the shortnose sturgeon. Analyses should include:

- ❖ Assessment of new data and follow-up studies as needed, to determine whether new critical habitat needs to be designated.
- ❖ Identification of characteristics and locations of critical habitat function and process that are needed for the listed species (e.g. food webs, spawning and rearing habitat, processes of water and sediment flow, access to migration routes and ranges)
- ❖ Analysis of the ways that the proposed action will impact these aspects of critical habitat
- ❖ Analysis of the effects on species survival and recovery of proposed changes in the license under the Flows and Fish Passage Agreement
- ❖ Analysis of the effects on species survival and recovery of likely changed external conditions during the proposed term of the license—including
 - (a) climate change;
 - (b) greater flow and level changes that will be likely in the Turners Falls impoundment as the energy grid becomes more dominated by variable renewables and Northfield Mountain is incentivized by greater price variability and new energy storage incentives, resulting in more frequent and longer-duration water pumping and releases.

3. Needs for data, monitoring, assessment, and potential adaptive management during the license term

Finally, the agencies will need to consider what kind of data will need to be collected, and what kinds of ongoing monitoring and assessments will be needed to ensure compliance with the ESA for the full term of the license, and what will be decision points and processes or substantive requirements for adaptive management if the species is found to be in jeopardy during the license term.

Thank you for the opportunity to provide these comments.

Sincerely,



Eve Vogel
Energy Policy and Rivers Group, RiverSmart Communities

Department of Earth, Geographic, and Climate Sciences
UMass Amherst

Energy Policy and Rivers group, Energy Geographies and Politics Project
 RiverSmart Communities
 Department of Earth, Geographic, and Climate Sciences
 UMass Amherst
 Amherst, MA 01003

TO:

MassDEP – BWR
 Attn: FirstLight 401WQC
 100 Cambridge Street, Suite 900
 Boston, MA 02114

June 3, 2024

RE: 401 Water Quality certificate Applications, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

Dear Mass DEP:

Please accept the following comments on the 401 Water Quality Certificate Application for Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063).

Sincerely,

Faculty:



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Comments on: Water Quality Certificate Applications to Massachusetts Department of Environmental Protection, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

Energy Policy and Rivers, a subgroup of the UMass Energy Geographies and Politics Project
With input from **UMass RiverSmart Communities**

About us:

UMass Energy Policy & Rivers, part of the UMass Energy Geographies and Politics Project, aims to bring expertise on both river management and electric markets and policy, to advocate for a clean energy transition that also protects ecosystems, communities, and public access to decision making. The RiverSmart Communities program combines social and river science, institutional and policy research, and community outreach to research and address river flood management in New England; in this document its expertise informs our comments on natural river processes.

Attachments:

We attach three documents we have submitted in other comment periods, as we build on these and in several places reference them. We believe you will find them the most helpful if you review them in the following order:

1. Comments on the Flows and Fish Passage Settlement Agreement (**F&FP**) (May 26, 2023)
2. Comments on the Mass DOER long-duration storage study (**LDSE**) (Sep 1, 2023) (see particularly Section B, on Northfield Mtn); and
3. Comments on the FirstLight FERC license applications (**AFLAs**) (May 22, 2024)

Comments:

As outlined below, the proposed terms of FirstLight's new licenses for Turners Falls and Northfield projects, FirstLight's water quality certificate application to MassDEP, and the two Settlement Agreements on which the water quality application relies, do not adequately protect the existing and designated uses of the Connecticut River, as required by the Clean Water Act. In the following we outline measures that MassDEP needs to require as conditions for the issuance of any WQC for the Facilities.

1. Passage

Turners Falls Dam and the Turners Falls Impoundment block and impair passage for fish; for other aquatic life, including aquatic macroinvertebrates, riparian and floodplain species; and for water, sediment, and wood that naturally rejuvenate habitat. This blocked passage degrades the biological integrity of the river here, upstream, and downstream. The AFLAs and F&FP do not adequately address these problems.

- a. **Passage at Turners Falls Project.** The Turners Falls dam blocks natural passage of fish and other aquatic, riparian and floodplain organisms, and turns approximately 20 miles of river into lake habitat. It also blocks natural river flows of water, sediment, and debris, modifying fluvial-geomorphic functions that would otherwise naturally rejuvenate river, riparian, and floodplain habitat. The old mill canal system, now converted into a 2 mile hydropower water-

delivery chute whose sole function is to add head to the Cabot station generators, is an unnatural environment that few fish or other organisms survive, while it leaves the adjacent stretch of the river itself, called the “bypass reach” (a name clearly focused on something other than river ecology), largely dewatered. Because of these problems, the Turners Falls Project is the most destructive bottleneck for migratory fish on the whole Connecticut River, with only 12% of the shad that pass Holyoke Dam passing Turners and 0% of American eel.

One of the great strengths of the AFLAs and F&FP is that FirstLight fully and directly acknowledges current problems with fish passage and addresses these problems in multiple ways. Importantly, through the Turners project, improved upstream fish passage will be centered around allowing fish and other organisms access to a much more natural migratory environment: “Migratory fish will follow the natural route of the Connecticut River where they can either utilize spawning habitat from the considerably higher bypass flows ... or continue to the spillway lift to access spawning habitat above” (F&FP, Proposed Article A300, Fish Passage Facilities). Accordingly, the plan includes a new state-of-the-art fish lift at the dam and subsequent decommissioning of the Cabot fish ladder (F&FP, Proposed Article A300, Fish Passage Facilities), and increased flows in the river rather than the canal and more naturalized flows out of Cabot (F&FP, Proposed Articles A110 and A120, Minimum Bypass Flows). FirstLight will also provide improved eel passage, improved downstream fish passage in the form of a plunge pool below dam, a barrier at Station 1 to prevent entrainment, and an improved Cabot system (F&FP, Proposed Article A300, Fish Passage Facilities). Implementation of these plans, as well as operating periods, are appropriately to be in consultation with fish and wildlife agencies (F&FP, Proposed Article A350, Fish Passage Facility Operation and Maintenance Plan).

There remain three crucial issues for passage at the Turners Falls project where FirstLight’s plans fail to meet Water Quality standards for aquatic life and biological integrity: (a) passage of other aquatic, riparian, and floodplain species besides fish, (b) providing passage through the project for natural river flows of sediment and wood (see our attached F&FP Comments); and (c) ensuring fish passage is built as soon as possible.

Currently there is no information or thought to (a) and (b) in the AFLAs or F&FP. Regarding (c), FirstLight explains that it is at the direction of the fish and wildlife agencies that the initial focus will be on downstream passage, in an effort to improve the number of successfully spawning shad that can go out to the ocean and return back to spawn again, as repeat spawners are particularly biologically productive. However, the delay of the upstream fishlift until year 9, a full 5 years after the downstream passage is to be completed, is not justified—especially since this upstream passage will delay improvements for other species besides shad as well.

MassDEP must condition the FERC license for the Turners Falls Project to ensure adequate passage aquatic life and biological integrity within, downstream, and upstream of the Turners Falls Project and Impoundment:

- (a) Downstream passage built concurrent with upstream passage, to be built immediately once the license is issued**
- (b) Adequate passage routes for other aquatic, riparian, and floodplain species besides fish;**
- (c) Passage through or over the project of natural sediment and wood that can maintain and rejuvenate habitat.**

- b. ***Passage at Turners Falls Impoundment.*** The Turners Falls impoundment is an altered ecosystem with deeper and slower water than its native riverine environment. Even more than in a regular dam reservoir, fish and other species in this impoundment also face regular hours-long dramatic velocity changes because of pumping and generation at Northfield Mountain. Flow direction can even reverse (negative velocity) anywhere between Turners Falls dam and the Northfield Mtn intake when the project pumps, and above the intake all the way to Vernon Dam when it generates (see LDES comments for gage data demonstrating one example nine miles upstream). Fish passage through the impoundment will become especially important once downstream passage and then upstream passage are improved at the Turners Falls project. As FirstLight mentions in its AFLA (Exhibit E), flow reversals and other velocity changes can disorient fish, and lead them to migrate in the wrong direction. When fish are disoriented or swim in reverse directions because of altered flows, they expend scarce energy and may fail to successfully migrate. Relicensing studies showed there were significant delays for migratory fish traveling through the impoundment to reach Vernon Dam's fish ladder due to distracting flows from the Northfield Mountain Pumped Storage intake (FirstLight 2016d). *This is a passage failure.*

Successful passage of fish and other organisms is also damaged by suction into the pumping system, which kills millions of native fish and other organisms. FirstLight proposes to install a barrier net to reduce entrainment, but it will be delayed for 7 years after the license is issued; and the mesh size will still allow entrainment of many small organisms. A fund will help mitigate for young fish killed but not for the impact on passage or on other organisms.

MassDEP must condition the FERC license for the Northfield Mountain project to ensure adequate passage of fish and other aquatic life through the Turners Falls impoundment, including non-fish species native to the Connecticut River, and including native species that migrate within river systems (but not to the ocean i.e. are not diadromous). This is essential for aquatic life and biological integrity of upstream and downstream portions of the river as well. This includes requiring that:

- (a) The barrier net must be installed as soon as possible, and improved mesh and changed seasonality must be required if the proposed plan proves inadequate;
- (b) Pumping and generating must be limited during migratory seasons of fish and other organisms

2. Flows and Hydropeaking

a. ***Flows and hydropeaking at Turners Falls Project***

Bypass reach: The Turners Falls project's canal system is an unnatural environment that leads to high fish mortality and a largely dewatered region of the natural river, referred to as the "bypass reach." The F&FP proposes improvements shaped around a well-founded goal: to restore more natural river conditions for organisms in the river. However, the minimum flows proposed do not adequately provide for river habitat and ecological health, especially in summer months in the 0.9 miles between the Turners Falls Dam and Station 1. Nor do minimum flows protect key cultural and historic resources (see various comments by the Nolumbeka Project and others).

Hydropeaking flows from the Turners Falls project: One of the direct connections between using a river to generate electricity, and how a hydropower plant affects a river, is hydropeaking.

When generators are run according to electrical demand or price, this creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion.

The F&FP proposes strong limits on hydropeaking from the Turners Falls project, which will dramatically improve conditions for aquatic life. However, the F&FP itself is conditioned on there being no additional requirements for the company in any flow-related requirements; thus these proposals are potentially at risk. (See more extended comments in our F&FP Comments, attached.)

MassDEP must condition the FERC license for Turners Falls Project to ensure adequate flows for aquatic life and biological integrity, including:

- (a) Requiring the flow changes toward reduced hydropeaking, and natural flow regime, proposed in the F&FP;**
- (b) Requiring 1400 cfs minimum flows in the portion of the river between Turners Falls Dam and Station 1, even during non-migration season—or, whatever flows are needed to maintain a high-quality diverse native macroinvertebrate community in this portion of the river.**

b. *Flows and hydropeaking at the Northfield Mountain Project*

In contrast to large improvements planned at Turners, FirstLight proposes no improvements related to hydropeaking in the Turners Falls impoundment. The daily hydropeaking fluctuations from Northfield constitute overarching water quality impacts. High pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day (much more in horizontal feet), and, as described above, the river sometimes to flow backwards. Usual daily fluctuations are more like 4-5 feet. But 9 vertical feet, even 4-5 feet, means a far greater horizontal distance, with water sometimes extending up the streambanks, other times not; this width is watered and dewatered repeatedly, day after day. These dramatic fluctuations in river flow, river level, and wetted or dry streambanks threaten higher temperatures and stranding for aquatic organisms in low-water places and times, cause displacement and disorientation during high-flow places and times, and contribute to riverbank and riverbed erosion. These are damaging impacts on a wide variety of aquatic life, including not only fish but also a range of aquatic, riparian, and floodplain macroinvertebrates and wildlife.

Beginning with the new license and increasing in the future, Northfield Mountain is likely to cause greater, longer, and more frequent fluctuations in water flow and level in the Turners Falls impoundment (lower Northfield reservoir). This is because (a) the company proposes larger upper-reservoir storage; and (b) starting about 10-15 years from now, variable generation like wind and solar will become a larger part of the grid, while gas generation becomes a smaller part; this will bring about greater variability in ISO market prices and thus incentivize increased operations at Northfield. Additionally, (c) there are several regulatory and legislative initiatives in New England states and localities to incentivize energy storage beyond the ISO markets (for example, proposal for medium-duration storage procurements in Massachusetts H. 4503); if these provide additional funds to FirstLight to operate Northfield a larger number of hours

outside of when it is profitable under the ISO markets, these state-based initiatives will extend this hydropeaking further.

In addition to these impacts from likely changed operations in the future, the impact of flow and level fluctuations on aquatic life is likely to worsen as climate change ensues, and what are now warm water and high temperatures become hot water and hot, desiccated streambanks.

Finally, the future promises changed *timing* and *seasonality* of major flow and level fluctuations that will be impacted by both changing operations and changing climate. For example, in a discussion of flow reversals in the AFLA Exhibit E, FirstLight states that these are not much of a problem for spring migration season, because high natural river flows from the spring freshet mean that reversals are less frequent. But in the past these have also been low because in the New England grid, there has been relatively steady electric demand and supply in our spring season, when there is neither high heat nor high air conditioning needs. But now, with climate change we will have a smaller snowpack, and the spring freshet is likely to be earlier and more limited, with more water coming downriver during the winter and very early spring. And meantime, the use of Northfield is going steadily up in the spring as solar power adds to our grid and lowers ISO prices during the day while creating a high-priced evening ramp-up from the so-called Duck Curve that FirstLight mentions in its AFLA. ***Even if there are not flow reversals every day, there will almost certainly be major flow velocity reductions on a daily basis during the spring migration season under FirstLight's proposed operations., given the grid and climate futures we face.***

Finally, all this will be worse if FirstLight is allowed to permanently increase its upper storage. The company's proposal would allow unlimited extended fluctuations in level and flow. These extended periods could mean almost 10 hours straight of approx. 20,000 cfs flow additions at the Northfield intake—a flow from a single discharge point that at times exceeds that of the river itself (currently this level of flow addition at this volume is limited to a bit under 8 hours) and nearly 15 hours of pumping at full capacity (somewhat lower flow removal, very roughly 17,000 cfs—still above the river's flow at times—a level which now is limited to closer to 12 hours). ***This augmented storage is not necessary for Northfield to perform its important functions for the energy grid.*** As mentioned in the AFLAs and F&FP, FirstLight has been granted the ability by FERC to use this additional storage when most needed by the grid. ISO-NE has even written in support of this when it has most mattered to the grid, as shown in a letter referenced in its WQC certificate application; ISO-NE requested this exception from FERC in the crucial winter of 2017-18 when there were reliability concerns. Permanent expansion of this upper storage without water quality constraints promises negative and unnecessary impact on existing and designated uses of the Connecticut River.

MassDEP must condition the FERC license for the Northfield Mountain Project to ensure flows are regulated to protect aquatic life and biological integrity, including:

- (a) Ensure flow and level fluctuations do not threaten migration and other ecological processes and functions of fish, wildlife, endangered species, or macroinvertebrate communities that are indicators of ecological health, including as climate change and grid transformation proceed.**

- (b) Require that the upper storage *not* be permanently expanded, but rather exceptions be allowed only when important for grid reliability; at these times require that the water quality impacts be monitored and mitigated.

3. Monitoring and adaptive management

There will be significant changes over the terms of the next license for Turners Falls and Northfield Mountain projects in both external conditions (e.g. climate change) and operations (due to changing electric markets / technologies / grid interconnections as well as potentially additional storage if FirstLight is allowed this in the new license).

Given a multi-decadal license, there is tremendous need for ongoing publicly available data, for monitoring and assessments as new measures are implemented or as conditions change, and for adaptive management to alter operations and practices as new information arises.

The following highlights areas where there needs to be consistent data, monitoring, and adaptive management in order to monitor and meet water quality conditions.

- a. ***Monitoring and adaptive management at Turners Falls Project.*** The F&FP has significant monitoring and adaptive management provisions related to Turners flows and especially fish passage. Given past failures of fish passage here and elsewhere, FirstLight appropriately has an “effectiveness testing” plan for both downstream and upstream passage through the Turners Falls Project, with a variety of pre-planned adaptive management measures (AMMs) (Proposed Articles A200 and A320). There are also important effectiveness testing and AMMs for flows and ramping limits (Proposed Articles A320 and A330).

The AFLA includes proposed protection, mitigation, and enhancement (PM&E) measures, including Draft Biological Assessments (BAs) for shortnose sturgeon and Puritan Tiger Beetle (Explanatory Statement, p. 5). It is unclear, however, what plans for publicly available data, monitoring, evaluation, and adaptive management will be put in place for these species.

Additionally, the F&FP says FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). This will be a major added beneficial source of data that will show how operations and flows are changing over time, for a host of reasons.

Among other things, this hourly flow data could enable empirical studies that can correlate flows with fish, hydrological, geomorphological, ecological, and recreation / use outcomes. However, it appears there is no plan to conduct such studies, outside of migratory fish and protected, endangered, and threatened species. More broadly, the Turners Falls project plan for data collection, monitoring and evaluation, and adaptive management seem poised to fail to monitor or address wider ecological indicators of ecosystem health (e.g. macroinvertebrate and fish communities, sediment flows, habitat rejuvenation and quality) and provide no monitoring plan for these.

There needs to be a plan to *use* the flow data, *and* to engage in broader monitoring, assessment, and adaptive management, in order to ensure attainment of water quality standards through the term of license.

MassDEP must condition the FERC license for Turners Falls Project to ensure adequate monitoring, publicly available data, analysis, and adaptive management, to ensure that water quality standards can be met throughout the license term. This includes:

- (a) Require the data and adaptive management measures of the F&FP be carried out, even if this agreement is set aside because of additional requirements;
- (b) Require the additional monitoring of shortnose sturgeon, Puritan tiger beetle, and other non-fish, non-endangered species, including aquatic macroinvertebrate communities below Turners Falls Dam, to analyze the impacts of flow, climate, operational changes, and mitigation; report on these as regular biannual water quality reports
- (c) Require adaptive management mitigation if data and analyses show underperforming aquatic life and biological integrity indicators.

- b. ***Monitoring and adaptive management at Northfield Mountain.*** The F&FP has much more limited monitoring and adaptive management provisions related to the Turner Falls impoundment and to hydropeaking into and out of the impoundment. There are monitoring, effectiveness testing, and adaptive management plans for the intake netting at Northfield (Proposed Article B210)—although if repeated effectiveness testing proves the net ineffective there is no backup plan. Additionally, FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). Off-license, FirstLight will support getting Vernon flow data as part of Vernon license.

The effectiveness testing and Adaptive Management Measures (AMMs) at the barrier net are crucial, although others with greater expertise may question whether the schedule for testing, the slow timeline for installation and AMMs, and the limited AMMs that are proposed are well supported by evidence.

It will be crucial to assess the impacts of changing Northfield Mountain operations, climate change, and the new improvements that will come with the new license (e.g. passage) on water quality indicators in the impoundment. Factors that need to be assessed will include fish populations, fish migration, native aquatic macroinvertebrate communities, endangered and threatened species, and migration patterns of fish and wildlife. Almost none of this appears to be contemplated by FirstLight.

MassDEP must condition the FERC license for Northfield Mountain to ensure adequate monitoring, publicly available data, analysis, and adaptive management, to ensure that water quality standards can be met throughout the license term in the Turners Falls impoundment. This includes:

- (a) Require the data and adaptive management measures of the F&FP be carried out, even if this agreement is set aside because of additional requirements;
- (b) Make publicly available hourly data on Northfield pumping and generation. If this is considered proprietary, use it to analyze the impacts on aquatic life in annual reports which are made publicly available.
- (c) Require the monitoring of fish populations and migrations in the impoundment; endangered species; native non-fish, non-endangered species that are indicators of ecological community health, including aquatic macroinvertebrate communities;
- (d) Analyze the impacts of flow, climate, operational changes, and mitigation; report on these as regular biannual water quality reports.

- (e) Require adaptive management mitigation if data and analyses show underperforming aquatic life and biological integrity indicators.**

4. 30 year license, and financial assurances for decommissioning

Northfield Mountain is not a producer of clean energy. The plant requires 1.35 times more energy than it produces, and usually the marginal energy that must be added to the region's generation mix for it to pump is gas-generated, meaning Northfield's operations result in a net gain in GHG emissions. Also, though the company claims in its WQC application that its operations reduce cost-to-load for the region, its route to incentivize this would add greater costs to Massachusetts ratepayers than it would save the region, and in the process this would reduce cost-efficiency for the region, as higher cost-to-load can disincentivize consumption at high-cost times (see LDES comments). Nonetheless, the plant is occasionally crucial for the grid (the AFLA and WQC application mention several instances), and in the 12% of annual hours it currently generates energy for the grid, it is doing so because it is cost-effective for the region, usually using gas generation to displace more expensive gas. (The plant will continue to be cost-effective for the regional grid as long as it continues operating according to ISO markets, and not according to additional state incentives or subsidies.)

Nonetheless, there is a high likelihood that Northfield's usefulness to the grid will change significantly over the next 30-50 years. In the first two decades or so, Northfield's storage will likely become more useful, as offshore wind increases the price differentials in the ISO markets that make energy storage economical. It will become cost-effective more hours of the year, and will likely significantly increase its hours of operations—more pumping and more generation.

However, after that Northfield is likely to diminish in usefulness, and in profitability, as other storage and demand-response technologies and capabilities are developed, as Hydro-Quebec imports begin through the NECEC line, and as the high-voltage grid becomes more interconnected with other regions.

Turners Falls is more steady in its economics, as it does not require such extensive and expensive power purchases, but it too may become less economical as the project ages and the impoundment collects sediment, lowering the storage capacity of the reservoir; and as a host of new sources of energy sources, technologies, grid interconnections, conservation, distributed energy, and systems of demand response come on line.

In a host of locations around the county, hydropower plants have faced decommissioning and/or removal as their maintenance costs over time grow, their profits diminish, and their environmental impact mitigation costs grow. In too many places projects have been sold off as bad assets to distant financial companies or bad-actor owners who have negligently let the projects sit, still impacting the river and sometimes causing severe safety risks (e.g. Edenville Dams in Michigan). In the last 25 years, the Turners Falls and Northfield projects have gone through at least four changes in ownership, and the current corporate owner is a pension company. Thus this process is not theoretical one only obtaining to distant locations.

And, as described above, the Turners Falls Dam and canal system have profoundly altered the habitat of about 23 miles of the Connecticut River. The only way to truly reduce these impacts is to decommission

and remove these projects. The restoration of Connecticut River ecology, fishable waters, and aquatic life, that could come from removal would be far beyond anything contemplated in current or past licenses, on the order of Penobscot or Kennebec or Elwha River restoration.

MassDEP needs to ensure that when these projects come to the end of their structural or financial life, there will be an opportunity for this level of water quality improvement, and for cost-effective restoration, rather than having abandoned, financially inviable projects left to impair water quality for decades to centuries to come, with costs falling on local and state taxpayers, as has happened in other places.

MassDEP must condition the FERC license for Northfield Mountain to ensure that water quality will not be impaired beyond these projects' useful lives, and to ensure a fresh review of water quality impairments and mitigation needs, given the rapidly changing conditions over the next few decades. This means that the WQC certificate should require:

- a) No more than a 30 year license, so that a full review by 2053 can examine the plants' operations under changed environmental, energy, financial, and climate conditions:
- b) Financial assurances for decommissioning when these projects come to the end of their useful or profitable lives.

Energy Policy and Rivers group, Energy Geographies and Politics Project
 RiverSmart Communities
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TO:

Kimberly D. Bose, Secretary
 Federal Energy Regulatory Commission
 888 First Street, N.E.
 Washington, D.C. 20426

May 26, 2023

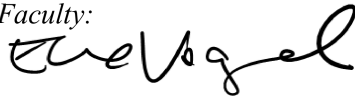
RE: Flows and Fish Passage Settlement Agreement, Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063)

Dear Secretary Bose:

Please accept the following comments on the proposed Flows and Fish Passage Settlement Agreement for Turners Falls Hydroelectric Project (FERC No. 1889-081) and Northfield Mountain Pumped Storage Project (FERC No. 2485-063).

Sincerely,

Faculty:



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Beatriz Barbosa Olivieri



Julia Fox
 M. Public Policy

Comments on: FirstLight Flows and Fish Passage Settlement Agreement of March 31, 2023

Energy Policy and Rivers, a subgroup of the UMass Energy Geographies and Politics Project

With input from

UMass RiverSmart Communities

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Summary:

The Turners Falls project and Northfield Mountain have very strong energy benefits and very negative environmental impacts. For this reason, the effort to balance trade-offs through this “Flows and Fish Passage” settlement is very important. The Agreement includes many valuable and well-justified measures that successfully provide best use of these projects for energy while mitigating a number of high environmental impacts. However, the *lack* of measures addressing numerous other critical issues means that overall, the Agreement does not achieve this balance. These missing measures include: measures to meet the needs of species and ecological processes other than migratory fish and protected, endangered, and threatened species; measures to address and mitigate the overarching impacts of the Turners Falls impoundment and Northfield hydropeaking; measures to ensure that high hydropeaking and pumped storage are prioritized over environment only when or if they are most needed for low-cost, reliable energy, and/or an energy transition to low-carbon energy; and data, monitoring, and adaptive management to understand and respond to these issues over the next 50 years, especially as climate change and an energy transition proceed.

Introduction:

The Turners Falls Project and Northfield Mountain play significant roles in the New England electric system and grid. Turners Falls provides low-carbon energy, and Northfield provides capacity, grid balancing, black-start, and other crucial grid functions. Thanks to these facilities’ operations for the electric grid, they are able to earn for FirstLight Power a robust profit through ISO markets, bilateral and multilateral contracts, and REC markets in other states. In 2019, Turners Falls had a profit of \$2,863,000 (FirstLight 2020a), and Northfield had a profit of \$59,356,000 (FirstLight 2020b). In total, both facilities earned FirstLight \$62,219,000.

However, the same infrastructure and operations that provide these functions also have high negative impacts on the Connecticut River, New England’s longest and arguably most iconic river, which has an interconnected set of ecosystems from the Canadian border to Long Island Sound. The Turners Falls dam blocks natural passage of fish and other aquatic, riparian and floodplain organisms, and turns

approximately 20 miles of river into lake habitat. It also blocks natural river flows of water, sediment, and debris, modifying fluvial-geomorphic functions¹ that would otherwise naturally rejuvenate river, riparian, and floodplain habitat. The old mill canal system, now converted into a 2 mile hydropower water-delivery chute whose sole function is to add head² to the Cabot station generators, is an unnatural environment that few fish or other organisms survive, while it leaves the adjacent stretch of the river itself, called the “bypass reach” (a name clearly focused on something other than river ecology), largely dewatered. Because of these problems, the Turners Falls Project is the most destructive bottleneck for migratory fish on the whole Connecticut River, with only 12% of the shad that pass Holyoke Dam passing Turners and 0% of American eel (U.S. Fish and Wildlife Service, CT River Fish and Wildlife Conservation Office 2022). Additionally, both the Turners Falls and Northfield projects “hydropeak”: they run their generators according to electrical demand—or, more precisely in this post-electric restructuring era, according to electrical price. This creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion (Hayes et al. 2022).

Because these projects have both benefits and negative impacts, the effort to balance trade-offs through this “Flows and Fish Passage” settlement is incredibly important. The Agreement shows tremendous thought, significant offers of investment and operations change from FirstLight, and lays out changes that promise to have considerable benefit to fish and wildlife as well as recreational boaters. FirstLight argues that the Flows and Fish Passage Settlement Agreement promotes “an appropriate balance of environmental improvements with the need to maintain a low-cost and reliable source of clean, renewable power which contributes substantially to the reliability of the New England electric grid” (p.2).

However, the balance between energy benefits and environmental costs proposed in this agreement is supported with inadequate evidence. There are major environmental impacts that remain unaddressed, and, since the proposed license term is 50 years, under this Agreement these impacts could remain unaddressed until 2074 or later. Additionally, although important monitoring, new publicly available data, and adaptive management provisions are proposed to be added to the license, there are still crucial gaps in our knowledge about ecological and physical processes and conditions in the project areas and about how the project operations affect them. The Settlement Agreement does not adequately address these ongoing gaps, nor does it put in place systems to acquire needed data on a regular and ongoing basis, assess changes in conditions as operations or external conditions change, and apply adaptive management when and if indicated. Finally, it is not well demonstrated that the project operations proposed here, especially the likely increased Northfield operations within the 50-year license term, are needed in order “to maintain a low-cost and reliable source of clean, renewable power which contributes substantially to the reliability of the New England electric grid.” Since this is the justification for this Agreement, and for a license with these provisions, that also is a major data gap.

In the following we focus on five areas of the projects, some much better covered by the Settlement Agreement than others. Our comments are informed by recognition of both the projects’ distinct benefits to the New England electric markets and grid, and of the importance of protecting and supporting natural river processes and robust river ecosystems as the most biologically and cost-effective

¹ Natural movements of sediment and debris in river systems, as it is carried or pushed by flowing water

² Height between upper and lower water elevations that creates potential energy that, when water is allowed to fall, powers hydroelectric turbines

way to protect and enhance biodiversity and native biological productivity.

1. Turners Falls Dam and Turners Falls Impoundment as Blockage: Passage for Fish and other Organisms

One of the great strengths of the Flows and Fish Passage Agreement is that FirstLight fully and directly acknowledges current problems with fish passage and addresses these problems in multiple ways. Importantly, through the Turners project, improved upstream fish passage will be centered around allowing fish and other organisms access to a much more natural migratory environment: “Migratory fish will follow the natural route of the Connecticut River where they can either utilize spawning habitat from the considerably higher bypass flows ... or continue to the spillway lift to access spawning habitat above” (Proposed Article A300, Fish Passage Facilities). Accordingly, the plan includes a new state-of-the-art fish lift at the dam and subsequent decommissioning of the Cabot fish ladder (Proposed Article A300, Fish Passage Facilities), and increased flows in the river rather than the canal and more naturalized flows out of Cabot (Proposed Articles A110 and A120, Minimum Bypass Flows). FirstLight will also provide improved eel passage, improved downstream fish passage in the form of a plunge pool below dam, a barrier at Station 1 to prevent entrainment, and an improved Cabot system (Proposed Article A300, Fish Passage Facilities). Implementation of these plans, as well as operating periods, are appropriately to be in consultation with fish and wildlife agencies (Proposed Article A350, Fish Passage Facility Operation and Maintenance Plan).

In the Turners Falls impoundment (Northfield Mountain’s lower reservoir), FirstLight will install a seasonally operated barrier net around the Northfield Mountain Project tailrace/intake to reduce loss of juvenile shad and migrating eels through entrainment at the Northfield Mountain Project (Proposed Article B200) and will provide an off-license ichthyoplankton fund to offset remaining mortality.

Despite these strengths, there is limited attention in these measures to (a) passage of other aquatic, riparian, and floodplain species besides fish; and (b) fish passage through the Turners Falls impoundment. There is inadequate information to ensure that the proposed measures will address passage for organisms beyond fish, including riparian and floodplain as well as aquatic species.

Fish passage through the impoundment will become especially important once downstream passage and then upstream passage are improved at the Turners Falls project. Relicensing studies showed there were significant delays for migratory fish traveling through the impoundment to reach Vernon Dam’s fish ladder due to distracting flows from the Northfield Mountain Pumped Storage intake (FirstLight 2016d).

Another aspect of passage that is not well justified based on existing evidence is the timing of improvements, in particular the Northfield barrier net and the upstream fishlift. It is not explained adequately why installation of the barrier net to reduce entrainment will be delayed for 7 years after the license is issued. Regarding the fishlift timing, FirstLight explains that it is at the direction of the fish and wildlife agencies that the initial focus will be on downstream passage, in an effort to improve the number of successfully spawning shad that can go out to the ocean and return back to spawn again, as repeat spawners are particularly biologically productive. Although this is well justified, the delay of the upstream fishlift until year 9, a full 5 years after the downstream passage is to be completed, is not justified, especially given the negative impact of this 5-year delay on early additional shad returners. Additionally, there is unclear explanation for why upstream passage improvements for other species should be delayed this additional length of time.

2. Artificial lake habitat: Turners Falls Impoundment / Northfield lower reservoir

In contrast to the deep attention to improving natural habitat and flow in the Turners Falls Project, the ecological impact of the Turners Falls impoundment appears not to be considered in the Flows and Fish Passage Agreement. This impoundment is an altered ecosystem and habitat, in which riverine habitat has been transformed into lake habitat, with deeper and slower water, and a much wider wetted channel. This alteration dramatically alters habitat, species assemblages, and biophysical processes, and it needs to be recognized as an overarching impact of the Turners Falls project (cf. FirstLight 2015a, 2015b, 2015c, 2016b). Closely related, it also leads to water quality impairments.

These impacts could be addressed fully by decommissioning and removing the Turners Falls Dam. The Flows and Fish Passage Agreement appears to have no support for consideration or analysis of a decommissioning or removal option.

There are also ways to address the impact through mitigation, e.g. species supports for riverine species, habitat refuges, promotion of fishing for lake-enhanced predatory species, and water quality mitigation. Unavoidable impact could be addressed through off-site mitigation, commensurate with the impact of the impoundment. The license studies that focused on the impoundment offer beginning points to provide a plan for this mitigation, but the Flows and Fish Passage Agreement does not appear to pay attention to this overarching impact.

3. Turners Falls canal system vs. river (“bypass reach”): Minimum flows

The Turners Falls canal system creates an unnatural environment that leads to high fish mortality and a largely dewatered region of the natural river. A major area of concern when discussing the canal system is the portion of the Connecticut River that runs alongside the Turners Falls project, referred to as the “bypass reach.” There are currently minimum flow requirements in place for the bypass that range seasonally, with the highest minimum flow being 400 cfs during fish passage season (Proposed Articles A110 and A120). The Flows and Fish Passage Settlement Agreement proposes strong improvements to these requirements, citing the need for higher flows to create more wetted river habitat. Some of these flows will be provided from the Turners Dam, and more from outflows from Station 1, 0.9 miles below the dam (Proposed Articles A110 and A120). As explained in the AIR response, FirstLight will also count contributions from a small tributary and non-FirstLight generator on the canal toward the minimum flows.

These flow improvements are shaped around a well-founded goal: to restore more natural river conditions for organisms in the river. Years of research have affirmed the importance of natural river conditions in providing for diverse and self-maintained habitats and species assemblages (e.g. Yoder et al. 2008). The attention to increase wetted width and depth will help support this. However, as demonstrated in the comments of the Connecticut River Conservancy, the minimum flows proposed in the Flows and Fish Passage Agreement do not adequately provide for river habitat and ecological health, especially in summer months in the 0.9 miles between the Turners Falls Dam and Station 1.³ There is no evidence that these areas are unimportant to river ecology. Additionally, as explained in the comments

³ CRC comments have been informed by a UMass Fisheries Science student, Julian Burgoff, who is also a collaborator with our Energy Policy and Rivers group.

of the Nolumbeka Project and confirmed by the Connecticut River Conservancy, the minimum flows do not protect key cultural and historic resources.

We note two additional key points, informed by river science. First, one of the best ways to assess stream ecosystem quality is to survey macroinvertebrates (see e.g. MassDEP 2022). Apart from odonate surveys conducted in the bypass reach and below Cabot station, relicensing studies failed to quantify macroinvertebrate communities or evaluate their response to project operations downstream of the Turners Falls dam. The appropriate volume of minimum flows through the river can be ascertained only with data about what is needed to ensure a healthy or at least steadily recovering native macroinvertebrate population or meet the standards of a similar biological indicator.

Second, in addition to higher water flows, natural sediment flows are needed to maintain and rejuvenate habitat, riffles and pools (Brandt 2000). Large wood that comes in with rain events also supports ecosystem health and recovery, providing refugia and habitat complexity (Anlanger et al. 2022). It appears the Flows and Fish Passage Agreement is not based on any effort to quantify the impact of the long reduction of these natural river inputs of sediment and woody debris, nor consideration about how to provide these in the future.

4. Hydropeaking vs. natural river flow

4a. Hydropeaking at the Turners Falls Project

One of the direct connections between using a river to generate electricity, and how a hydropower plant affects a river, is hydropeaking. When generators are run according to electrical demand or price, this creates dramatic fluctuations in river flow and river level, threatening higher temperatures and stranding for aquatic organisms in low-water places and times, displacement and disorientation during high-flow places and times, and riverbank and riverbed erosion (Greimel et al. 2018; Hayes et al. 2022).

Besides fish passage and higher minimum flows, the other great benefit of this Flows and Fish Passage Agreement is the reduced hydropeaking at the Turners Falls project. Moderations of peak flow that are proposed in this Agreement include ramping rate limits⁴, moderation at Turners of any peak flows coming in from Vernon Dam, and limits on how far off the natural river flow (NRF) Cabot Station can run (Proposed Articles A140, A110, A120, and A160). In the case of flows out of Cabot, most of the time Cabot will have to be within 10% of NRF, but a specified number of hours a month (the number of hours varies according to month/season/time), flows can vary up to 20% from NRF (Proposed Article A160). This additional variation up to 20% will allow Cabot to respond to especially high price signals in the ISO markets, thus providing the flexibility of hydropower when it is both especially needed, and especially remunerative for FirstLight. At the same time, the lower variance (only up to 10% off from NRF) will mean that most of the time, the river will benefit from more natural ecological conditions.

Remaining questions on plans for Turners Project hydropeaking that are not spelled out in the Flows and Fish Passage Agreement include: Can we be assured that flows from Turners Dam and Station 1 will also be within 10% of NRF, and subject to ramping rate restrictions? Will ramping rate restrictions make the 4-hour recreation releases produce flow patterns that have genuine similarity to a natural rain event hydrograph? (FirstLight says: "the releases are anticipated by MDFW to have downstream ecological benefits by providing occasional high flows simulating rain runoff events that would benefit stream

⁴ The AIR response suggests that the ramping rates limits may still be problematic, as the hourly ramping will take place in only the first 5 minutes of every hour.

ecology and aquatic life in a natural river system” (Proposed Article A150) but there have been no modeling efforts to demonstrate this.) And, are there any biological guardrails against potential zero-flow conditions in FirstLight’s “unrestricted capability to respond to emergencies, ISO New England, Inc. (“ISO-NE”) transmission and power system requirements, and other regulatory requirements” (Proposed Article A160) (p. 15)? If not, these issues need to be addressed, as they rest on unsubstantiated scientific foundations.

4b. Hydropeaking at Northfield Mountain

In contrast to large improvements planned at Turners, perhaps the biggest gaping hole in the Flows and Fish Passage Agreement relates to hydropeaking in the Turners Falls impoundment (lower Northfield reservoir, i.e. Connecticut River between Turners Falls and Vernon dams). The daily hydropeaking fluctuations from Northfield, Vernon, and tributaries constitute overarching environmental impacts. High pumping and generation at Northfield can cause water levels to fluctuate up to 9 vertical ft/day, and the river sometimes to flow backwards.

Beginning with the new license and increasing in the future, Northfield Mountain is likely to cause greater, longer, and more frequent fluctuations in water flow and level in the Turners Falls impoundment (lower Northfield reservoir,). This is because (a) The Flows and Fish Passage Settlement Agreement allows larger upper-reservoir storage (Proposed Article B100); and (b) Starting about 10-15 years from now, variable generation like wind and solar will become a larger part of the grid, while gas generation becomes a smaller part; this will bring about greater variability in ISO market prices and thus incentivize increased operations at Northfield. Additionally, (c) there are several regulatory and legislative initiatives in New England states and localities to incentivize energy storage beyond the ISO markets; if these provide additional funds to FirstLight to operate Northfield a larger number of hours outside of when it is profitable under the ISO markets, these state-based initiatives will extend this hydropeaking further.⁵

The Flows and Fish Passage Agreement asserts, astonishingly, that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100). FirstLight appears to acknowledge that expanded storage will likely mean expanded operations,⁶ i.e. greater pumping and generation, at the same time again asserting that this will have no effect: “FirstLight nor any other entity has identified potential adverse effects of the expanded operations on protected, threatened, or endangered species” (Proposed Article B100). FirstLight appears to base this general assertion of no effects on this lack of information about protected, threatened, or endangered species, combined with a

⁵ For example there is a current Massachusetts [study of medium- and long-duration storage directed by the Mass Clean Energy Center](#). In the development of the Request for Proposals for this study, FirstLight submitted comments that this study should consider contracts that would require Northfield Mountain to operate more. Their comments cited a 2020 report commissioned by FirstLight, which argued for contracted operations in which some of Northfield’s units would be “guaranteed to generate a minimum amount of energy each day at the highest-priced hours in the day-ahead market” even if Northfield could not operate profitably based on ISO-NE market signals (MassCEC: LDES Written Feedback Request 23-11).

⁶ In their response to FERC’s Additional Information Requests on May 11, 2023, FirstLight backed off from the implication that additional storage would mean larger operations, saying “It is not possible to predict, with any certainty, whether increasing the Upper Reservoir storage capacity will result in more or less operation of Northfield Mountain. Northfield Mountain’s operation is a function of the cost of the energy to pump and the value of the energy when generating. These values vary hour to hour, day to day, and week to week.” Note that this contrasts significantly with the company’s hoped-for future, as evidenced by its policy advocacy referenced in note 5.

single erosion model: “FirstLight evaluated expanded upper reservoir storage operations in the operations model and within the erosion modeling, which showed no increase in shoreline erosion” (Proposed Article B100). Based on this single model evaluating erosion (FirstLight 2016a)—a study whose methodology was demonstrated to be inadequate by a peer review study by Princeton Hydro, and a previous Army Corps of Engineers study (see comments of Connecticut River Conservancy submitted 25 May 2023)—the company calls for a 50-year license with unlimited sanction to hydropeaking.

This is patently inadequate. Relicensing studies showed that existing hydropeaking already has a negative impact on fish spawning in the impoundment (FirstLight 2016c). In the statement quoted in the previous paragraph (in Proposed Article B100), FirstLight reveals that we do not have adequate evidence of the impact of hydropeaking on protected, threatened, or endangered species. We have even less information on how current hydropeaking affects habitat and habitat conditions for aquatic species that may not be threatened or endangered, but are resident to the impoundment and contribute important ecosystem services (e.g. native mussels and fishes); and we have still less information on the impact on riparian and floodplain species. Yet the limited fish studies show that there is already significant impact from hydropeaking. Lack of data is inappropriate evidence for this Agreement to say nothing about the range and timing of hydropeaking in the impoundment that may be appropriate to ensure a healthy range and population of native species there.

It also follows from the fish spawning data in the impoundment that increased operations should at the very least be hypothesized to create larger negative impacts on a range of species and habitats. There is inadequate evidence to justify not addressing the potential impacts of increased Northfield hydropeaking that may be enabled by a larger upper reservoir.

To fully address the impact of Northfield’s hydropeaking would require idling or removal of the Northfield Mountain project, or construction of a lower reservoir separate from the river, to create a closed loop system. During the study selection process, the Connecticut River Watershed Council (now the Connecticut River Conservancy) requested a study to look at these options, but FERC rebuffed the need. The Flows and Fish Passage Agreement appears to have no consideration or analysis of a decommissioning, removal, or idling option, even for future scenarios when this project may no longer be a cost-effective resource for the New England electric grid.

There are also ways to address the impact of hydropeaking through mitigation, e.g. reduced flow and level alterations in the impoundment during migration or emergence seasons, or a system like that at Cabot that maintains a closer percentage to NRF or allows a reduced amount of variation. (See section 4c below for more on this.) Unavoidable impact could be addressed through off-site mitigation, commensurate with the impact of hydropeaking.

Finally, if Northfield is allowed to increase the size of its upper storage reservoir, and/or if its hydropeaking operations significantly increase, the impoundment will be in a condition that is outside the conditions studied within the relicensing studies. There is a complete lack of evidence to justify any particular operations plan in these future scenarios (see section 5).

4c. Inadequate energy justifications for hydropeaking and increased upper reservoir storage

FirstLight claims that the increase in storage is warranted as a way “to provide regional electric reliability benefits by expanding Northfield’s ability to store large quantities of energy and enhancing its ability to deliver long-duration and flexible capacity when it is most needed” (Proposed Article B100). The

Explanatory Statement continues: “The Northfield Mountain Project is ISO-NE’s best tool in continually maintaining the load and generation balance throughout New England. When large generation sources, including the region’s nuclear generators, and transmission lines with neighboring systems shut down unexpectedly, the Northfield Mountain Project is able to fill the generation void without the need to start an equivalent amount of oil and natural gas fueled generators. This supports system reliability while reducing the carbon footprint of the region” (Proposed Article B100).

There is no doubt that Northfield Mountain is an excellent tool in ISO-NE's toolbox, and has an ability unsurpassed by any other resource currently on the grid to respond to major events like the shut-down of generators, neighboring systems, or transmission lines (Chadalavada 2023; Barton 2023). It also can rapidly provide load to the grid in events like “Snowtober” of 2011 when most coastal generators stayed online while demand dropped precipitously as millions of inland trees dropped their branches on power lines and caused widespread outages (personal communication, ISO-NE).

However, Northfield Mountain is already used (and highly compensated) when it is most needed. For example, although specific earnings are not public, it is likely that Northfield Mountain earned several million dollars in a few hours when the region was in scarcity and near-scarcity conditions on December 24, 2022 (Chadalavada 2023), the day “hydropower came to the rescue” (Barton 2023). Most days, however, Northfield Mountain is not needed much, and not used all that much (see note 5), because the grid is relatively well balanced by other lower-cost resources that meet peak and flexibility needs.

As suggested above, Northfield may well be needed more 10 or 15 years from now, when wind power begins to replace gas generation on the grid, as the predominance of variable generation is predicted to cause regular price fluctuations in the ISO-NE markets. There may be more frequent times when supply and demand are especially out of balance, similar to what happened on December 24, 2022 (Chadalavada 2023).

It should be noted, although FirstLight does not spell this out in the Agreement, that based on the tremendous benefit to the grid that Northfield is likely to provide through the early decade or two of a likely future wind-dominated New England, it could be argued that FirstLight must earn enough profit at Northfield in order to stay in business—and therefore it needs to be able to increase operations between now and that eventuality. However, neither greater upper-reservoir storage nor greater hydropeaking is needed for FirstLight to earn enough to stay in business until then. ISO-NE’s capacity market is designed to maintain generators like Northfield in use and availability for occasional or future need, and even under the lowered capacity revenues FirstLight predicted by 2024 in its Amended Final License Applications (FirstLight 2020a, 2020b), it could continue to earn some \$30 million per year in the capacity markets. Thanks to the excellent flexibility offered by hydropower, FirstLight can also bid into the profitable forward reserves market, as well as earn high windfalls in major events like December 24, 2022. Such events of course promise to increase in frequency with climate change and a grid more dependent on variable generation.

Even in the future, when the New England grid may be dominated by wind, there is still inadequate evidence for the need to permanently expand the Northfield upper reservoir’s storage. There is even less so now, years before wind is expected to become a dominant resource in the New England grid. There are other options apparently not considered by the Settlement Agreement for futures with more variable generation in New England. FirstLight notes that “FERC has approved temporary amendments in the past to operate between 1004.5 and 920 feet when needed to support ISO-NE system needs” (p. 24) (Proposed Article B100). This suggests that an approach to hydropeaking at Northfield that ought to be

considered would be something more akin to the restrictions on flows out of Cabot. In the case of Northfield, because ISO-NE market prices fluctuate directly in response to grid need, and hydropeaking is being justified based on grid need, the license might allow greater hydropeaking, and greater use of the upper reservoir, not based on a set number of hours per month, as at Cabot, but on electric market price deviation from the norm. Perhaps the license could automatically enable use of additional storage at times of high grid need (for example an OP-4, as on December 24, 2022), so that FirstLight need not wait for FERC to allow case-by-case temporary amendments. Without examining these kinds of options and analyzing the actual future of the grid and ISO-NE markets, the Settlement Agreement, which rests on an asserted need from the grid for unlimited and increased hydropeaking at Northfield, is ill founded.

A final comment. Northfield and other pumped storage facilities may well become marginally competitive in the grid before the end of a 50-license term, as new storage technologies are expected to come online (see e.g. DeRose, DOER and MassCEC n.d.). Given this, both the 50-year license term and the lack of a plan for potential future decommissioning are as ill founded as the assertion of the need for more storage in the upper reservoir.

5. Data, monitoring, adaptive management

FirstLight asserts that the Flows and Fish Passage Agreement addresses “all of the issues among the Settling Parties pertaining to fish passage, flows for fishery, ecological conservation, and recreation purposes, and protected, threatened, and endangered species for relicensing of the Projects” (p. 1). It continues, “The proposed license articles are supported by substantial evidence, including 39 relicensing studies approved by the Commission as well as additional studies conducted by FirstLight and submitted into the record... adequate basis upon which the Commission can determine that the Flows and Fish Passage Settlement Agreement adequately protects fish and wildlife and enhances recreational boating, and is in the public interest” (p. 2).

However, even if the proposed measures were founded on all available current evidence, and the proposed measures covered all relevant aspects of “fish passage, flows for fishery, ecological conservation, and recreation purposes, and protected, threatened, and endangered species” —which they do not; see sections 1-4 of these comments—there remains tremendous uncertainty about how these factors will respond to the proposed new P&E measures; to likely future changed operations at Northfield Mountain; and to climate change.⁷ Moreover, as described in the previous section, while these licenses and expanded storage in Northfield’s upper reservoir are justified by a claim that “the Northfield Mountain Project is ISO-NE’s best tool in continually maintaining the load and generation balance throughout New England,” (Proposed Article B100) there is also high likelihood that Northfield’s usefulness to the grid will change significantly over the next 50 years—likely becoming more useful, prompting more pumping and generation, 10 or 15 years from now, and then diminishing in usefulness as other storage and demand-response technologies and capabilities are developed, and as the high-voltage grid becomes more interconnected with other regions. The high likelihood of significant change in outcomes, need, operations, and external conditions belie the unsubstantiated claim that the current plan for monitoring and adaptive management is adequate.

⁷ The Connecticut River Watershed Council also called for a comprehensive analysis study of climate change’s future impacts on the projects, but this was not done.

Given the proposal for a 50 year license, there is tremendous need for ongoing publicly available data, for monitoring and assessments as new measures are implemented or as conditions change, and for adaptive management to alter operations and practices as new information arises. The Flows and Fish Passage Settlement Agreement has very valuable provisions in place for effectiveness testing of a number of measures, and a suite of planned adaptive management measures (AMMs). However, there is a lack of data, monitoring, and planned adaptive management in a host of other areas. There is inadequate evidence to justify these deficiencies. This is especially true for a license that will continue into the next several decades, when climate change and an energy transition are accelerating, and are likely to fundamentally alter the conditions under which these plants operate within this half-century timeframe.

Given this, the ability of FirstLight to veto all AMMs for the first 25 years in the following statement is not based on adequate evidence: “No other AMMs other than those specified in the proposed license article will be required for the first 25 years of the license unless expressly agreed to by FirstLight, MDFW, NMFS, and USFWS.” (Proposed Article A320)

The following highlights areas where the lack of data, monitoring, and adaptive management is poorly justified by the evidence.

a. Data, monitoring, and adaptive management at the Turners Falls Project

The Flows and Fish Passage Agreement has significant monitoring and adaptive management provisions related to Turners flows and especially fish passage. Given past failures of fish passage here and elsewhere (Brown et al. 2013), FirstLight appropriately has an “effectiveness testing” plan for both downstream and upstream passage through the Turners Falls Project, with a variety of pre-planned adaptive management measures (AMMs) (Proposed Articles A200 and A320). There are also important effectiveness testing and AMMs for flows and ramping limits (Proposed Articles A320 and A330).

Additionally, FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). This will be a major added beneficial source of data. Among other things this could enable empirical studies that can correlate flows with fish, hydrological, geomorphological, ecological, and recreation / use outcomes. However, it appears there is no plan to conduct such studies, outside of migratory fish and protected, endangered, and threatened species. More broadly, the Turners Falls project plan for data collection, monitoring and evaluation, and adaptive management seem poised to fail to monitor or address wider ecological indicators of ecosystem health (e.g. macroinvertebrate and fish communities, sediment flows, habitat rejuvenation and quality) and provide no monitoring plan for these. This lack of a plan to use the flow data, or to engage in broader monitoring, assessment, and adaptive management, is not justified given the wide changes expected in habitat and passage through this Project.

The Flows and Fish Passage Agreement also references the Amended Final License Application (AFLA) from Dec 2020 which included proposed protection, mitigation, and enhancement (PM&E) measures, including Draft Biological Assessments (BAs) for shortnose sturgeon and Puritan Tiger Beetle (Explanatory Statement, p. 5). FirstLight will file revised BAs within 180 days of fully executed settlement agreement. It is unclear, however, what plans for publicly available data, monitoring, evaluation, and adaptive management will be put in place for these species.

b. Data, monitoring, and adaptive management at Northfield / Turners Falls impoundment

The Flows and Fish Passage Agreement has much more limited monitoring and adaptive management provisions related to the Turner Falls impoundment and to hydropeaking into and out of the impoundment. There are monitoring, effectiveness testing, and adaptive management plans for the intake netting at Northfield (Proposed Article B210)—although if repeated effectiveness testing proves the net ineffective there is no backup plan. Additionally, FirstLight will provide hourly information on flows out of Turners Falls dam all year round (Proposed Article A210). Off-license, FirstLight will support getting Vernon flow data as part of Vernon license.

The effectiveness testing and AMMs at the barrier net are crucial, although others with greater expertise may question whether the schedule for testing, the slow timeline for installation and AMMs, and the limited AMMs that are proposed are well supported by evidence.

Public data on Turners Falls impoundment levels at the Turners Falls dam will be a major added beneficial source of data. Among other things this could enable empirical studies that can correlate hydropeaking and impoundment levels with fish, hydrological, geomorphological, ecological, and recreation / use outcomes. However, it appears there is no plan to conduct such studies. As quoted above, the Flows and Fish Passage Agreement asserts, based on a single erosion modeling study, that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100). Based on this conclusion, there appear to be no requirements for monitoring the effects of increased use of the pumped storage station on fish passage; on endangered, threatened and protected species; on macroinvertebrate populations or other indicator biota; or on other environmental parameters—much less a plan for adaptive management in case negative impacts should be found. Yet the few studies performed, including the fish spawning study, already show negative impacts at present. This lack of a data, monitoring, and adaptive management plan in the impoundment is manifestly inadequate.

Similar publicly available hourly data on Northfield pumping and generation will be crucial to assess impacts of Northfield Mountain operations. Yet this does not appear to be contemplated. Additionally, data from Vernon flows, if made public, would be similarly useful. Concerning the Vernon data, it appears that this will mainly be used internally by FirstLight in order to calculate NRF and provide for dampened flex or peaking releases from Vernon. It is not clear whether this Vernon flow data will be made public. Its usefulness for monitoring and adaptive management will be much less if not.

c. Data, monitoring, and adaptive management of the energy justification for Northfield operations

Although grid needs are used to justify additional storage at Northfield, and to support the entire Flows and Fish Passage Agreement, there is very limited data provided in this plan that can be used to assess the needed careful balance between grid needs, and environmental protection and enhancement. There is no planned data or monitoring for this, nor measures to change operations or engage in other adaptive management if the balance shifts. This lack is especially problematic at Northfield Mountain, because in this Settlement Agreement FirstLight uses grid needs to justify unlimited pumped storage hydropeaking as well as additional storage. Current operations amply meet the needs of the grid; this undercuts FirstLight’s claims (see section 4c). But greater operations may in the future be critical for balancing a wind-dominated grid. Indeed, tremendous change is expected in the next few decades in energy policies and markets, grid interconnectivity, and generation and storage technologies, and these will all affect Northfield’s role and the importance of increased operations and storage. The lack of a

plan for re-evaluating grid needs and the corresponding needs for environmental assessment and mitigation as these changes proceed leave the fundamental premise of this proposed 50-year Agreement unsupported.

Summary List: Measures unsupported by substantial evidence, or areas where measures are lacking but substantial evidence calls for action

1. Turners Falls Dam and Turners Falls Impoundment as Blockage: Passage for Fish and other Organisms

- Lack of measures to provide passage for organisms other than fish, including riparian and floodplain as well as aquatic species (Proposed Article A300)
- Delay of installation of the barrier net for 7 years after the license is issued (Proposed Article B200)
- Delay of installation of the fishlift timing until 9 years after the license issued, which is 5 years after Turners Falls project downstream passage is to be complete (Proposed Article A300)

2. Artificial lake habitat: Turners Falls Impoundment / Northfield lower reservoir

- Lack of consideration of decommissioning and removal of Turners Falls dam to alleviate overarching impact of impoundment on fish and other aquatic, riparian and floodplain species, and on natural ecological and biophysical functions to create, rejuvenate and maintain native riverine habitat (no article)
- If Turners Falls Dam is left in place, lack of mitigation (onsite or offsite) commensurate with overarching impact of impoundment on fish; on other aquatic, riparian and floodplain species; and on natural ecological and biophysical functions that can create, rejuvenate and maintain native riverine habitat (no article)

3. Turners Falls canal system vs. river (“bypass reach”): Minimum flows

- Proposed flows in the 0.9 river miles between Turners Falls and Station 1 not demonstrated to provide for a healthy or steadily recovering native macroinvertebrate population or meet the standards of a similar biological indicator of river ecological health (Proposed Articles A110 and A120)
- Lack of measures to mitigate and restore natural river inputs of sediment and woody debris to maintain and rejuvenate habitat, riffles, pools, refugia, and habitat complexity (no article)

4. Hydropeaking vs. natural river flow

4a. Hydropeaking at the Turners Falls Project

- Lack of evidence that ramping and flow rules from Turners Falls dam and Cabot will protect natural river function in the 0.9 mile stretch of river between Turners Falls Dam and Station 1 (Proposed Articles A110, A120, and A140)—or that the plan to have hourly ramping occur in the first five minutes of each hour (AIR response) meets ecological needs for reduced ramping
- Lack of evidence that the 4-hour recreation releases will produce flow patterns that have similar ecological benefits to a natural rain event hydrograph (Proposed Article A150)
- No biological guardrails against potential zero-flow conditions in FirstLight’s “unrestricted capability to respond to emergencies, ISO New England, Inc. (“ISO-NE”) transmission and power system requirements, and other regulatory requirements” (Proposed Article A160).

4b. Hydropeaking at Northfield Mountain

- Inadequate evidence for the assertion that “Increasing the upper reservoir storage will have no adverse environmental effects” (Proposed Article B100):
 - Lack of data on effects of current pumping and generation fluctuations in impoundment on protected, endangered and threatened species; on habitat and habitat conditions for resident species in the impoundment that contribute important ecosystem services (e.g. native mussels and fishes); on riparian and floodplain species; counter-evidence from studies of fish spawning in the impoundment, which show significant adverse environmental effects (FirstLight 2016c).
 - Lack of measures to address the potential impacts of increased Northfield hydropeaking that may be enabled by a larger upper reservoir.
- Lack of consideration of idling or removal of the Northfield Project, or construction of a lower reservoir separate from the river to create a closed loop system, to alleviate overarching impact of hydropeaking on fish and other aquatic, riparian and floodplain species, and on natural ecological and biophysical functions of riverine habitat (no article)
- If Northfield Mountain continues to operate, lack of mitigation (onsite or offsite) commensurate with overarching impact of hydropeaking on fish; on other aquatic, riparian and floodplain species; and on natural ecological and biophysical functions of native riverine habitat (no article)

4c. Inadequate energy justifications for hydropeaking and increased upper reservoir storage

- Undemonstrated need for unlimited or increased hydropeaking at Northfield and larger permanent storage to provide low-cost, reliable energy, and/or balancing for a energy transition to low-carbon energy (no article)
- Lack of a plan for future decommissioning when Northfield Mountain is likely to become uncompetitive in the New England grid (no article)

5. Data, monitoring, and adaptive management

- Lack of measures to collect data, make this data publicly available, perform regular monitoring and assessment, and implement adaptive management to
 - Ensure passage for organisms other than fish through the Turners Falls project (including the “bypass reach”)
 - Ensure passage for organisms other than fish, including riparian and floodplain as well as aquatic species, through the Turners Falls impoundment.
 - Maintain ecosystem health and natural biophysical processes in the face of climate change (e.g. macroinvertebrate populations, sediment flows, habitat rejuvenation and quality) in the Turners Falls project (including the “bypass reach”) and Turners Falls impoundment
 - Assess and mitigate the overarching impacts of Turners Falls impoundment on fish and other organisms, including riparian and floodplain species; and on hydrological, geomorphological, and ecological processes
 - Assess and mitigate the impacts of hydropeaking at Northfield Mountain on fish and other organisms; on hydrological, geomorphological, and ecological processes; and on recreation / use outcomes, including as operations change or hydrology changes with climate change

- Ensure that high hydropeaking and pumped storage are prioritized over environment only when or if they are most needed for low-cost, reliable energy, and/or an energy transition to low-carbon energy, including accounting for how this changes as climate change and an energy transition proceed (see section 4c).

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From: [sarah matthews](#)
To: [Jones, Timothy M \(DEP; david.hilgeman@mass.gov; McHugh, Michael \(DEP; elizabeth.a.stefanik@mass.gov; Mayor, Anna \(DEP; Deirdre.Desmond@mass.gov; pamela.harvey@mass.gov; DEP Hydro \(DEP\); Comerford, Joanne \(SEN; Blais, Natalie - Rep. \(HOU; Freedman, Jared \(SEN; Coryat, Corinne \(HOU; Cohen, Elena \(SEN; Katharine Lange; Lydia Olson; Sarah Matthews; Andrea Donlon; Kimberly MacPhee; Geoffrey M. Goll, PE; Mark Gallagher; r1_press@epa.gov; Bishop Joseph@epa.gov; Arsenault, Dan@epa.gov; Knapp, Michael@epa.gov; Timmermann, Timothy@epa.gov; croy.rachel@epa.gov; Joseph Graveline; david brule; Eve Vogel; Rich Holschuh; Lynn Lankshear; julie.crocker@noaa.gov; jolvan.morris@noaa.gov; ken_sprinkle@fws.gov; kenneth_hogan@fws.gov; Regine Spector; Kathy Urffer; Kate Buckman; Kevin Cassidy; Ron Shems; David Mears; Rebecca Todd; Andrew Fisk; Jesse Lederman@markey.senate.gov; wmrn@gmail.com; Tony Zelle; Rachelle Adam;](#)
Cc:
Subject: FirstLight 401 WQC
Attachments: [Comments on Draft FirstLight 401 WQC \(2025-02-21 - Final\).docx](#)
Sent: 2/21/2025 12:09:06 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Please accept the attached comments from Western Mass Rights of Nature and other concerned citizens and groups regarding MassDEP's draft Section 401 Water Quality Certificate for the FirstLight facilities.

Respectfully,

Sarah Matthews
 Co-founder of Western Mass Rights of Nature

February 21, 2025

Elizabeth Stefanik
Attn: FirstLight 401WQC, MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Draft 401 Water Quality Certification with Conditions, dated February 24, 2025 (the “WQC”), issued by the Massachusetts Department of Environmental Protection (“MassDEP”) to the Applicants named therein (collectively “FirstLight”) in connection with relicensing of the Turners Falls Hydroelectric Project (the “Turners Dam”) and the Northfield Mountain Pumped Storage Project (“Northfield” and collectively with the Turners Dam, the “Facilities”)

Dear Ms. Stefanik:

MassDEP’s draft WQC, referenced above, represents a failure by MassDEP to fulfill its statutory responsibilities to the Connecticut River and the people of Massachusetts whose interests MassDEP is supposed to serve.

Our system of laws and regulations is designed to ensure that the process of determining whether and on what terms we utilize a natural resource like the Connecticut River to generate power fairly and appropriately balances the various needs of people and the environment. In the context of relicensing the Facilities, MassDEP is tasked with a critical role in this regard. Under the Massachusetts Clean Water Act, MassDEP is responsible for taking “*all action necessary or appropriate*” to secure to the Commonwealth the benefits of the federal Clean Water Act, which is to “*restore and maintain the chemical, physical and biological integrity*” of our waters. The Massachusetts Surface Water Quality Standards (the “SWQS”) were adopted to meet these objectives and MassDEP is charged with enforcing these standards through the water quality certificate permitting process (the “Permitting Process”) for the benefit of the river, her ecosystem, and all residents of the Commonwealth.

In issuing its draft WQC, MassDEP has ignored the well-supported requests of many Massachusetts residents and groups, including scientists, academic experts, NGOs and concerned citizens, and refused to add conditions to its WQC necessary for the protection of the Connecticut River and compliance with the Clean Water Act and the SWQS.

In conducting the Permitting Process, MassDEP is also violating other policies and laws. It has refused to consult with the Indigenous collective, The Nolumbeka Project Tribal Coalition (“Nolumbeka Project”), despite requirements to the contrary set forth in the Environmental Justice Strategy issued by the Massachusetts Executive Office of Energy & Environmental Affairs in February of 2024 (the “EJ Justice Strategy”). The department has also refused to add conditions

to the WQC that adequately address threats from operation of the Facilities to federally endangered Shortnose Sturgeon as required under the federal Endangered Species Act (“ESA”).

If MassDEP issues the WQC in its current draft form, it will do so in violation of the Public Trust Doctrine.

Conditions Insufficient to Comply with the SWQS and Clean Water Act

Multiple commentators to MassDEP have attested both in writing and verbally to the severe damage caused by operation of the Facilities to the Connecticut River ecosystem and thus the many ways in which these facilities violate the Clean Water Act and the SWQS. We have pleaded with MassDEP to insert conditions in its WQC to mitigate this ongoing damage and address these violations of law, but MassDEP has refused to do so.

Improper Designation of “Most Sensitive Use”.

As one example, MassDEP has designated two endangered plants that have taken up residence in the dewatered area below the Turners Dam, the Tufted Hairgrass and Tradescant’s Aster, as the “the most sensitive use” of this portion of the river. The department states that the existence of these plants is the reason that it cannot require FirstLight to increase minimum flows over the dam above the paltry 500 cfs minimum flow from July 1 – November 15, a flow which is not even enough to fill the riverbank. MassDEP’s designation of these plants as the “most sensitive use” of the river is nonsensical. Surely the Tufted Hairgrass and Tradescant’s Aster are not naturally occurring in the middle of a healthy, flowing riverbed? Why does MassDEP consider these terrestrial plants the most sensitive use of the river and not the federally endangered Shortnose Sturgeon, fish who can only survive in a river with deep channels, who have lived in this area of the river for thousands of years and are struggling to survive there still?

As has been well-documented to MassDEP, two strandings of Sturgeon occurred just this past summer in rockpools below the Turners Dam – stranded by FirstLight’s failure to release sufficient water over the dam to support their habitat. *FirstLight’s own Draft Biological Assessment for Shortnose Sturgeon* shows that a Weighted Usable Area for Sturgeon living below the Turners Dam occurs with flows of around 2,000 cfs, far above the 500 cfs that would be allowed under the draft WQC.¹

MassDEP is mandated by its own SWQS and by the ESA to protect the endangered Shortnose Sturgeon and must add a condition to its WQC increasing minimum flows to support these animals. ***Sturgeon, not plants, are the “most sensitive use” of the area of the Connecticut River below the Turners Dam.***

¹ Figure 7.2.2.2-1 of the Shortnose Sturgeon Draft Biological Assessment shows the habitat vs flow relationship for adult sturgeon in Reach 1 below the Turners Dam, where a maximum Weighted Usable Area occurs around 2,000 cfs.

No Conditions to Protect the River from Increased Northfield Pumping Operations.

As another example, MassDEP has dismissed concerns about the impact of a license provision that would allow FirstLight to significantly increase use of Northfield's upper reservoir storage capacity. Use of this increased storage capacity would enable FirstLight to increase Northfield's pumping operations by up to 25%, resulting in continuous 24-hour cycles of pumping the river levels up and down, without rest.

It is well-documented that Northfield causes severe damage to the Connecticut river. Its pumping operations kill millions of fish and other aquatic organisms sucked up into its intake pipe each year, erode riverbanks, confuse migrating fish, harm shoreline species and can make the river run backward for miles. Allowing FirstLight to significantly increase Northfield's pumping operations would substantially increase the devastation that Northfield already causes to the river. To make matters worse, the new climate law passed by the Massachusetts legislature at the end of last year requires Massachusetts to sign long-term contracts to procure energy storage and specifically states that existing storage facilities qualify for these contracts. If FirstLight is awarded a long-term energy storage contract, it will be financially incentivized to make full use of the additional storage capacity of Northfield's upper reservoir and the river will suffer horribly as a result.

Yet incredibly, MassDEP does not even consider the negative impacts of the permitted increase in use of Northfield's storage capacity in issuing its draft WQC, concluding without any supporting evidence that allowing FirstLight to utilize this increased capacity –

“will have no significant impact on water quality, fish, plants, wildlife, endangered species, and erosion”.

Illegal Thermal Discharge

As a third example, Gerry Szal, a former MassDEP aquatic biologist, has documented that Northfield discharges significant quantities of heated water into the Connecticut River at times, causing river temperatures in the impoundment to significantly increase. Heat is a pollutant under the Clean Water Act and FirstLight has no permit to discharge this pollutant into the river. Yet even though Mr. Szal has presented his findings to MassDEP, *the draft WQC is silent about FirstLight's illegal discharge of heated water into the river.*

The above examples are three of many concerns raised by commentators to MassDEP that MassDEP has chosen to ignore. ***Any WQC issued by MassDEP for the Facilities must add conditions to address the above concerns and all other concerns raised by commentators including those raised by Western Mass Rights of Nature, et al., in its May 31, 2024, and December 11, 2024, letters to MassDEP.***

Failure to Consult with Nolumbeka Project

Many Massachusetts residents attended the public information session held by MassDEP at the Shea Theater in Turners Falls on October 10, 2024. We were shown a powerpoint presentation that included a slide purporting to outline “What MassDEP Cannot Consider – Outside its

Jurisdiction”. One item listed as beyond MassDEP’s purview in the Permitting Process was “Tribal historic and cultural interests that are not regulated under state water quality laws.” A MassDEP official confirmed at the meeting that no consideration of Indigenous concerns would be part of the Permitting Process.

MassDEP’s failure to consult with Nolumbeka Project and consider and act on their concerns violates the terms of the EJ Justice Strategy. On page 99, the strategy states that MassDEP has developed internal guidance for permit proceedings, including 401 water quality certifications, which require advance outreach to environmental justice populations to address their needs and concerns. The EJ Justice Strategy goes on to state that –

“permits should include, when appropriate, specific mitigation requirements that are tailored to the needs and requests of the potentially impacted EJ population.”

Nolumbeka Project has been a stakeholder in the relicensing of the Facilities since the proceedings began and is also an intervenor in these proceedings. They have pleaded over the years for better protection for the Connecticut River and the aquatic life she supports, as well as for protection of Traditional Cultural Properties located in the dewatered reaches below Turners Dam. Yet the concerns of Nolumbeka Project have been ignored by MassDEP in the Permitting Process.

MassDEP must not issue a WQC for the Facilities without consulting with Nolumbeka Project and properly addressing their concerns, as outlined in their letter to MassDEP, dated December 17, 2024.

Conditions Insufficient to Comply with ESA

Despite entreaties by multiple commentators, MassDEP has refused to add conditions to the WQC that adequately address harm caused by operation of both Facilities to federally endangered Shortnose Sturgeon, including those discussed above. As we noted in our December 11th letter, *MassDEP must itself comply with the terms of the ESA* in its issuance of any WQC for the Facilities. Courts have held that a governmental third party such as MassDEP pursuant to whose authority an actor directly exacts a taking of an endangered species may be deemed to have violated the provisions of the ESA.²

Unless and until MassDEP has added conditions to its WQC that are guaranteed to protect the endangered Shortnose Sturgeon, a WQC for the Facilities must be denied.

Violation of Public Trust Doctrine

The Public Trust Doctrine is a common law right that predates the birth of England. This doctrine provides that certain natural resources like the Connecticut River are the common property of all citizens and must be preserved and protected by the government both as a public natural asset and to prevent eco-centric harm. The state’s power to alienate public property has traditionally been constrained by the requirement that such transfers result in a benefit to the public. When public

² Strahan v. Cox, 127 F3d 155 (1st Cir 1997).

trust property is involved, the benefit to the public must be far greater and more clearly demonstrated. Today, public trust property like the Connecticut River is under siege from pollution, climate change, biodiversity loss and other causes. MassDEP's issuance of the WQC as drafted to FirstLight, a private company, under these circumstances, thereby greenlighting destruction of the Connecticut River ecosystem for another 50 years, does not pass muster.

For all the reasons stated above, MassDEP's issuance of the WQC to FirstLight as drafted would violate the Public Trust Doctrine.

We submit this letter as our public comments on MassDEP's draft WQC and reserve all rights.

Sincerely,

Sarah Matthews
 Alexis Polokoff
 Will Szal
 Miriam DeFant
 Julian Burgoff
 Sharin Alpert
 David Sharken
 Hetty Startup
 Miriam Kurland
 Margaret J. Hall
 Becca Matthews
 Jef Sharp
 Sophie Sharp
 Gerald Szal
 Gary Seldon
 Kent Higgins
 Diane Dix
 Steve Jones
 Davis Johnson
 Gene Hall
 Dorothea Sotiros
 Larry Buell
 James Hannon Burgoff
 Johanna Hall
 Pearl Burgoff
 Hannah Harvester
 Nathalie Ritz
 Sandra Boston
 Diana Riddle
 Nathalie Vicencio
 Sharon Yeoh McDonald
 Paki Wieland
 Patricia Hynes
 Lundy Bancroft

Lydia de Faveri Spiegel

Judith Wolff

Tom Rossmassler

Anna Gyorgy, Chair of Wendell Energy Committee

The Franklin County Continuing the Political Revolution Climate Task Force

The Enviro Show

Western Mass Rights of Nature

From: [Louise Amyot](#)
To: dep.hydro@mass.gov
Subject: First Light WQC
Sent: 2/21/2025 5:30:20 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Elizabeth Stefanik:

I am submitting comments in response to the Mass DEP 401 draft that was posted in January.

My name is Louise. I live in Greenfield, MA and have done for the past 50 years. I love the river and my family and I have spent many hours hiking, walking, picnicking along the Connecticut over the years.

I don't believe that the draft that was submitted for the 401 WQC was adequate or complete and did not properly address the damage that the current pumping station has been visiting on the river these many years.

My Comments:

We, the people who live along the Connecticut River and who depend on her for so much of the quality of our lives, have asked that the pumping station be stopped. Or, that the pumping station build itself a lower reservoir so that the river would not be forever impacted. OR, at least, that the license given to First Light be limited to, perhaps, 30, or even, 40 years since we cannot imagine what the condition of the river will be in years hence, given the impact of climate change.

Instead, I understand that First Light is seeking to expand the upper reservoir, increasing its capacity by some measure. Such a move would worsen all the harms that the Pumping Station is doing now. It would increase the pressure of the sucking pull on the fish caught in the proposed fish nets, killing and crushing hundreds of fish at every draw. It would decrease the amount of water left in the lower river bed after each draw to levels incompatible with whatever fish or aquatic life managed to avoid the updraw. Consider, also, the river conditions for those who would recreate on it; we experienced nearly dry river beds before and it was unacceptable for boaters and fishermen, alike.

In addition, that large amount of reservoir water, on its way back into the river, would increase the amount of damage to the river's banks, multiply the amount of particulate matter in the water and impact the quality of the water in the river for miles both up and downstream. Clean water, as mandated by the Water Quality Act, is **not** full of fish guts, churned up soil and eroded river bank flora.

Let us be clear:

- a) The energy provided by First Light is NOT clean energy; the station uses fossil fuels to pump the water up to its reservoir.
- b) The water that will come out of that reservoir will NOT be clean water; as stated above, water that is full of shredded fish, upchurned soil and ripped up riverbank flora is not clean water.** and
- c) the fish that will be thrust against that screen will NOT survive.

Sadly, I believe that First Light will get its unjustified 50-yr license and the will of the people will be, once again, damned!

Put me down as one severely disillusioned Massachusetts voter.

Louise Amyot
Greenfield, MA 01301

From: [Kim](#)
To: dep.hydro@mass.gov
Subject: First light Dep hearing
Sent: 2/3/2025 4:56:57 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello,

I would like DEP to rescind the license extension for First Light in Northfield Ma.

I have learned how harmful the process they are using to create energy storage is for the fish and plants in our amazing river. And the energy they are storing is not benefitting those they are hurting- namely us and our environment. Please require them to stop their destructive activities and find other ways to accomplish what they really need to.

Thank you.
Kim Audette
Sunderland, Ma 01375

Sent from my iPhone

From: [Jackie Ballance](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 1/27/2025 10:32:39 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

I want to endorse the public comment regarding the relicensing of FirstLight Power's facilities on the Connecticut River as submitted last may by my Senator Jo Comerford and my representative Lindsay Sabadosa. Some of their highlights include:

We welcome the proposal in the Flows and Fish Passage Settlement Agreement for year-round hourly information on flows out of Turners Falls dam and request additional, publicly-available data and analyses, including:


- a) Real-time data on the flows released from the hydropower facilities, or pumping.
- b) Regular monitoring and publicly available data of macroinvertebrate populations in the Turners Falls bypass reach, downstream of Cabot station, and in the Turners Falls impoundment, as macroinvertebrates provide one of the best ways to assess stream ecosystem quality.
- c) Monitoring of, and public data on, populations and passage through the Turners Falls impoundment and its shore banks of non-fish species that provide important ecosystem services, including native mussels and riparian species.
- d) Annual reports on how operations are changing due to energy markets and policy, and due to FirstLight's flow and passage improvements; and the benefit to and impact on the environment and recreation. We also request that these annual reports be sent to State and Federal officials.

and

We welcome the proposal in the Flows and Fish Passage Settlement Agreement for year-round hourly information on flows out of Turners Falls dam and request additional, publicly-available data and analyses, including:

- a) Real-time data on the flows released from the hydropower facilities, or pumping.
- b) Regular monitoring and publicly available data of macroinvertebrate populations in the Turners Falls bypass reach, downstream of Cabot station, and in the Turners Falls impoundment, as macroinvertebrates provide one of the best ways to assess stream ecosystem quality.
- c) Monitoring of, and public data on, populations and passage through the Turners Falls impoundment and its shore banks of non-fish species that provide important ecosystem services, including native mussels and riparian species.
- d) Annual reports on how operations are changing due to energy markets and policy, and due to FirstLight's flow and passage improvements; and the benefit to and impact on the environment and recreation. We also request that these annual reports be sent to State and Federal officials.

Sincerely,
 Jackie Ballance


Florence, MA

From: [Fran Bancroft](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401WQC
Sent: 2/24/2025 3:44:07 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Mass DEP,

The Connecticut River has been an important factor in my life. I've canoed, kayaked, camped, walked the shores, enjoyed drives along sections of its length, and drunk in its beauty with family and friends for over 80 years..

I'm writing to urge you to apply tough water quality standards in the FirstLight projects at Northfield and Turner's Falls. This would include exerting tighter control over river depth, sedimentation, flow rate, and other parameters that affect the life of fish and other aquatic creatures as well as people.

I'm concerned about fish getting caught in turbines at Turner's Falls and killed in the pumping suction at the Northfield facility. I'm concerned about the variability of water depth on the aquatic animals who depend on the river for their very homes and passage routes. I'm concerned for recreational users about murky water where the river used to run clear.

I urge you to take immediate, strong action to ensure the river's health for the benefit of all life in our state.

Thank you for your consideration. God bless your work.

Frances M Bancroft
[REDACTED]
Amherst, MA 01002

From: Michael Bathory <[REDACTED]>
Sent: Monday, February 24, 2025 10:11 AM
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Please see the attached landowners comments regarding FirstLight's 401 Draft Water Quality Certificate.

We own land along the Connecticut River near the Northfield Mountain Pumped Storage Project. The pump and release cycle of this project continues to negatively impact the streambanks along this section of the river, as we previously wrote in our 5/28/24 letter to you.

Thank you for your continued attention to the issues outlined in our letter (see attachedLandowners respond to 401-WQC Draft, 2/24/25,pdf).

/s/Michael Bathory and Maryanne Gallagher

[REDACTED]
Gill, MA 01354
[REDACTED]
[REDACTED]

Michael Bathory and Maryanne Gallagher

Gill, Massachusetts 01354

February 24, 2025

Elizabeth Stefanik,
MassDEP Bureau of Water Resources
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071
Turners Falls Project No. 1889-085

Landowners Comments on FirstLight's 401 Draft Water Quality Certificate

Dear Ms. Stefanik,

This letter is submitted to you as a public comment to the MassDEP 401 DRAFT Water Quality Certificate (WQC) released 01/24/2025.

We are current owners and stewards of over 100 acres of conservation land which includes 1,250 feet of riverbank along the Connecticut River in Gill, MA. Our site is located a short distance upstream and across from the Northfield Mountain Pumped Storage Project (NMPS) tailrace.

Since NMPS began operating in 1972, our and adjacent sections of the Connecticut River have experienced clear examples of the impact of "... hydropower operations contribute to erosion by raising and lowering the water surface elevation more frequently and significantly than natural fluctuations." (Draft WQC, p. 38)

We appreciate MassDEP's acknowledgement and inclusion of streambank erosion in the WQC Findings and requirement of compliance with Special Condition 25 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law (DRAFT WQC p 38-41). We also support the WQC's requirement regarding monitoring and repair of streambank erosion related to the operation of the NMPS as outlined in Appendix F: Appendix F: Erosion Mitigation, Stabilization, and Monitoring Plan (Draft WQC, pages 106-109).

We request two changes to be included in the MassDEP WQC requirements:

1. Addition to Appendix F: Erosion Mitigation, Stabilization, and Monitoring Plan

We recommend that streambank erosion repair and stabilization project designs and standards include:

- MassDEP's consultation and involvement with the local Franklin Regional Council of Government's Connecticut River Streambank Erosion Committee, the Conservation Commissions of the towns of Erving, Gill, Montague, and Northfield, and riverbank landowners in the creation of stabilization designs.

- Require that the 2009 and 2010 John Field studies commissioned by Gill Conservation Commission be included in considerations for upcoming repair and stabilization plans. These studies contain site specific erosion stabilization design recommendations for the Gill, MA section of the Connecticut River Impoundment. (*See enclosed document of excerpts from these studies.*)

We have been advocating for better erosion stabilization designs for many years as riverbank landowner members of the FRCOG Connecticut River Streambank Erosion Committee and resident participants in Gill Conservation Commission meetings. To illustrate our longstanding concerns about the designs for restoration projects along the Connecticut River, we are enclosing the following documents:

Enclosed you will find:

- Michael Bathory's notes to Gill Conservation Commission following their 08/04/2009 meeting with New England Environmental to discuss the SEEDS/ Field Third Party Review prior to Phase III construction
- Michael Bathory's notes to Gill Conservation Commission including 11/12/2013 photos of the Bathory/Gallagher and Wallace/Watson, Split River 2, and Lower Split River Farm Phase III stabilization sites
- Excerpts from a 9/17/2016 letter to DEP's Brian Harrington discussing stabilization design improvement recommendations

2. Modify Special Condition 10: Turners Falls Impoundment Water Level Management

- Deny FirstLight's request for an increase of the maximum and minimum water surface elevation of the upper reservoir.
- There do not seem to be enough safeguards to prevent FirstLight from overusing the maximum volume of water in the upper reservoir.

Northfield Mountain Pumped Storage operations cause significant daily fluctuations along the river. This degree of fluctuation effects not only the height, but also the direction of the water flow. Throughout the years we have observed the river flowing upstream as far as one mile north of the tailrace when water is being released from the upper reservoir through the giant turbines.

In its relicensing application FirstLight proposed to increase the maximum and minimum water surface elevation of the upper reservoir. In the interests of preventing more streambank erosion and vegetative disturbance, there should be less, not more, volume and frequency of hydro releases from the upper reservoir as the section of the river near the tailrace is already one of the most dynamic areas in the Turners Falls impoundment.

Currently this area is being treated like a large reservoir rather than as an active river. The ongoing filling and draining action of the NMSP is making the sandy soil of the historic geological Lake Hitchcock even more unstable, resulting in a higher level of streambank disturbance and erosion. Fewer and smaller, not more and larger, releases from the upper reservoir are necessary to stabilize this section of river which has seemingly been turned into a tidal river.

Thank you for your continued attention to these important issues for the Connecticut River and for providing this opportunity for public input on the Draft Water Quality Certificate.

Submitted by:

/s/ Michael Bathory and Maryanne Gallagher

[REDACTED]
[REDACTED]

encl: A) Excerpts from 2009 and 2010 John Field Geology Services recommendations for erosion stabilization designs commissioned by the Gill Conservation Commission

B) 2009 and 2013 notes to Gill Conservation Commission and excerpt of 2016 letter to Brian Harrington of MassDEP advocating for better erosion stabilization designs

A) Excerpts from 2009 and 2010 Field Geology Services recommendations for erosion stabilization designs commissioned by the Gill Conservation Commission

**Review of Phase III Bank Restoration for the Connecticut River
Gill, Massachusetts**

Submitted to:

Gill Conservation Commission Town of Gill^[SEP] 325 Main Road^[SEP] Gill, MA 01354

Submitted by:

SEEDS^[SEP] 11 Birchwood Ct. South Burlington, VT 05403

and

Field Geology Services P.O. Box 985 Farmington, ME 04938

June 30, 2009

p. 12 Aquatic vegetation

The design calls for thousands of individual aquatic plants to be placed in shallow fill between the coir log and the base of the slope. While the intent is for the vegetation to stabilize the beach face and trap additional sediment, we are concerned that the addition of less than 1 foot of fill, a single coir log, and the relatively low density of wood additions will be insufficient for the vegetation to survive in what is now an unvegetated area subject to frequent inundations and high wave energy. Given that numerous individual logs are to be buried just beneath the beach surface, the fate of vegetation just above the logs is unclear; will the logs encourage or discourage growth? The design accounts for some plant mortality by stating that “dead plant material (is) to be replaced”. However, no estimate is given regarding the expected mortality rate and no indication provided if a budget is available for replanting in subsequent years.

p.14 Overall stability

The success of the project, as designed, is contingent on the effective trapping of beach sediments. Because the individual logs are mostly buried below the beach surface, we do not suspect that they will effectively trap sediment. In riverine environments, deflector-type logjams or rock deflectors often promote sedimentation along the bank edge directly downstream from the structure. However, at this location, given the dominant sediment size, the daily fluctuations in stage, currents directed toward the bank rather than parallel to the bank, and the wave action, we do not expect that the large woody debris structures will promote sedimentation outside of the boundaries of the structure. Likewise, our observation of natural deflectors along the project reach (e.g., rock outcrops and wood accumulations) did not demonstrate any sediment trapping along the downstream bank edge.

p.19 Discussion

Field (2007) recommended experimenting with woody debris additions as a means for stabilizing eroding banks throughout the Turners Falls Pool and for accumulating sediment on beach surfaces. The proposed project site is one of the most dynamic areas in the pool, with back eddies created by water releases from the pumped storage facility, and, as such, does not represent an ideal area to experiment with various methods for using wood to trap sediment on the beach surfaces. We applaud NEE’s efforts to incorporate woody debris into the bank stabilization design and thereby eliminate the use of an unnatural rock toe. We believe with some changes to the current design, wood can be used to effectively stabilize the eroding banks in the

given setting (Appendix 1). While the alternative design concept must undergo a more thorough engineering analysis and design process before being implemented, we believe the concept of a log toe will ensure bank stability while different methods could be tested between the log toe and beach-edge toe to determine the methods that best result in the accumulation of sediment on the beach face. If the experimentation identifies a method that reliably accumulates sediment, future projects may be able to do away with the log toe protection. We would be happy to work with New England Environmental or other organizations involved in designing and permitting this project in order to further develop our alternative design concept into construction ready engineering designs.

Analysis of Phase III Bank Restoration at Lower Split River Farm Along the Connecticut River in Gill, MA

Prepared for

Gill Conservation Committee Gill, MA

Prepared by

Dr. John Field, Field Geology Services Farmington, ME

October 2010

EXECUTIVE SUMMARY

An analysis of the Phase III bank restoration at Lower Split River Farm along the Connecticut River in Gill, MA was undertaken to ascertain the potential to stabilize eroding banks using large woody debris within the Turners Falls Pool. The project, constructed in Fall 2009, consisted of a line of root wads spaced 15 to 20 ft apart and placed on the beach face approximately 20 ft from the bank toe. Gravel and other sediment was placed behind the root wad line as an access road but, after construction was left on the beach, covered with erosion control fabric, and planted with aquatic vegetation. Small log jams were placed between the bank and the root wad line while logs stacked parallel to the bank were placed discontinuously along the bank toe. Large embayments in the bank created by previous slumping were filled with logs such that the root wads were aligned with the bank on either side. The intent of the project as a whole was to aggrade the beach face, or at least preserve the added beach sediment, so water level fluctuations experienced during operation of the Northfield Mountain Pumped Storage Project would be less likely to inundate the bank toe and destabilize the bank.

While the individual root wads, logjams, and stacked log structures on the bank toe remain largely intact after one year, the project has not successfully induced sediment deposition. In fact, almost 10 ft of the added beach sediment behind the line of root wads has been eroded along the length of the entire project with the erosion control fabric and planted vegetation largely removed in these areas. Since the erosion has not yet reached the bank toe, no signs of active erosion are present along the bank toe. The lack of bank erosion, however, should not be construed as an indication of long-term project success, because erosion of the added beach sediment is likely to accelerate once the Northfield Mountain Pumped Storage Project returns to normal operations after a long hiatus that began in May 2010. If the erosion progresses to the bank toe, undercutting of the bank will ensue and the bank destabilized, initially along those portions of the bank not treated with stacked logs.

Given the lack of sediment deposition occurring at the Lower Split River Farm site where the wood additions are widely distributed and in poor contact with the beach face, future projects should concentrate the wood closer to the bank toe to increase the density of wood without greatly increasing the total amount of wood needed for each project. The wood would best be organized in closely spaced log jams attached to the bank to divert high velocity flood flows towards the center of the river and encourage deposition in the gaps between the jams. The treetops, not utilized at the Split River Farm site, can be woven into the log jams, so the attached branches, leaves, and needles can increase the wood contact on the beach face and encourage deposition within the log jams. Future projects should also incorporate log crib walls between the logjams to prevent erosive forces that act nearly perpendicular to the bank line (i.e., boat wakes

and water level fluctuations) from undermining the toe. The crib walls will be similar to the stacked logs used at the Lower Split River Farm but should be continuous along the bank and anchored with vertical log piles rather than with steel cables and duckbill anchors. Each project site consists of unique features, so the exact number and distribution of the logs and treetops to be used will vary, but long-term project success will, in all cases, depend on maximizing wood densities near the bank toe and the amount of woody surface area contacting the beach face.

B) 2009 and 2013 notes to Gill Conservation Commission and excerpt of 2016 letter to Brian Harrington of MassDEP advocating for better erosion stabilization designs

We have been advocating for better erosion stabilization designs for many years as riverbank landowner members of the FRCOG Connecticut River Streambank Erosion Committee and resident participants in Gill Conservation Commission meetings. The 2009 and 2010 Field Geology Services studies provided the foundation for the positions that we shared with the Gill Conservation Commission and in our 09/17/2016 letter to DEP's Brian Harrington. To illustrate our longstanding concerns about the designs for restoration projects along the Connecticut River, see the following notes:

Michael Bathory's notes to Gill Conservation Commission following their 08/04/2009 meeting with New England Environmental to discuss the SEEDS/ Field Third Party Review prior to Phase III construction:

- The Review basically says that the current design is not adequate in terms of the dimensions and placement of wood, the density of the logs, the orientation of the logs, the need for all logs to have root wads attached, and the need for an alternative anchoring system.
- The use of duckbill anchors with a woody debris installation is not recommended in floodplain soil.
- The Review states that the large woody debris structures are insufficient in size, placement, and anchoring. There is a lack of stability in the current design. There is a risk of scallop areas forming. Gaps in toe protection should be eliminated for root wads without logs.
- The entire bank must be stabilized for the project to be effective, i.e. the restoration should be continuous without gaps.
- Mickey Marcus of New England Environmental (NEE) said that Figure 6 in the Review most likely comes from some other river. He said that they have never used wooden stakes and have had no project failures of this type. (Actually, it is a photo of the Shearer stabilized site, across the river from the Bathory/Gallagher site)
- Mickey also dismissed the recommendations because John Field is not an engineer and did not provide detailed calculations to support their critique. Of course, that was not in the scope of the RFP and his SEEDS colleague, Maeve McBride, is an engineer who said in the SEEDS Review that "We would be happy to work with New England Environmental or other organizations involved in designing and permitting this project in order to further develop our alternative design concept into construction ready engineering designs."
- The proposed conceptual design alternative with its long toe, beach-edge toe, deflector-type engineered logjam eliminates the need for cabling or excavation beneath the bank face and thus reduces the risk of further destabilizing an already fragile bank. This buttressing approach seems to make much more sense than driving logs into the bank and removing some trees and root systems that are functioning as a stabilizing force. It seems like a good idea to not further destabilize the banks in an effort to restore them.
- NEE states that they will modify existing design plans in subsequent phases of work to improve success. Why not try to get it right from the start? That's why the Gill Con Comm sought a Third Party Review. As landowners we certainly want to get in right and not have our land disrupted for repairs using a faulty design.
- NEE and First Light have stated on numerous occasions that this is an experimental demonstration project. Their engineers have stated that they have no experience with engineered logjams using large woody debris and have only done a site visit on the Split

River Farm riverbank. So, why not listen to the advice of a fluvial geomorphologist and his consulting engineer who do have experience with the design and implementation of engineered logjams and are very familiar with the Turners Falls Pool from previous studies?

- There is a need for construction ready engineering designs for the alternative design. How can this be accomplished? Does state statute provide any guidance? Can DEP provide some guidance?
- As landowners we are not looking for a compromise design. We are looking for a design that will work.

Michael Bathory's notes to Gill Conservation Commission including 11/12/2013 photos of the Bathory/Gallagher and Wallace/Watson, Split River 2, and Lower Split River Farm Phase III stabilization sites

After reviewing the photos, it appeared that there was a need for:

- Stabilization of the bench with treatments other than the "aquatic bench" design.
- More and larger log jam structures. The Spring freshet will go over the top of the current log jams further compromising the banks behind and between them (see examples of alternative designs in the photos included in the two complete Field studies available from the Gill Conservation Commission).
- Log jams need to have branches woven into the structures to increase the collection of debris.
- Continuous treatment of root wads along the toe of the bank. Natural Heritage has expressed their approval for the use of root wads and their compatibility with dragonfly movement from the river. The bank areas between the current log jams and bank-full installations will continue to erode without further intervention.
- More timely reconstruction of steep banks showing signs of tension cracks and other failures before they become the erosion disaster that the Bathory/Gallagher site has become over the last 30 years since the NMPS facility began operating in 1972.
- What are FirstLight's plans for dealing with the return of ice in the Turners Falls Pool and the effects on their riverbank restorations after the closing of Vermont Yankee?

Excerpts from a 9/17/2016 letter to DEP's Brian Harrington discussing stabilization design improvement recommendations

RECOMMENDED DESIGN, CONSTRUCTION, AND MAINTENANCE IMPROVEMENTS:

- Stabilization of the bench with treatments other than the "aquatic bench" design.
- More and larger logjam structures. The spring freshet will go over the top of the current logjams further compromising the banks behind and between them.
- Logjams need to have branches woven into the structures to increase the collection of debris.
- Continuous treatment of root wads along the toe of the bank. MA Natural Heritage has expressed its approval for the use of root wads and their compatibility with dragonfly movement from the river. The bank areas between the current logjams and bank-full installations will continue to erode without further intervention.
- More timely reconstruction of steep banks showing signs of tension cracks and other failures before they become the erosion disaster that the final Phase III Bathory/Gallagher site has become, having lost 30 feet of riverbank since the Northfield Mountain Pump Storage Project began operating in 1972. (We shared photos of this site with FERC at the Scoping Meeting in January 2013.)

- Tree trunks placed on bank-full installations need to be anchored in place to avoid being swept downstream in the spring freshet.

QUESTIONS FOR FIRST LIGHT:

- What are FirstLight's plans for the maintenance and repair of the Phase III sites?
- What are FirstLight's plans for dealing with the return of ice in the Turners Falls Pool and the effects on their riverbank restorations after the closing of Vermont Yankee?
- How will the riverbank reconstructions be affected by First Light's proposed increase in upper reservoir capacity and generation?

Comments on FirstLight 401WQC

Greetings,

I'm a Massachusetts taxpayer and voter who lives about a mile from the Connecticut River in South Deerfield MA. I consider this river to be a shared Commonwealth economic, aesthetic and recreational resource. MassDEP clearly has a powerful and strategic role to play at this juncture; thank you for your attention to the matter.

I ask that the final draft be revised to address the following comments:

Regarding pp. 34, paragraph 2:

Please remove *"MassWildlife determined that while the FirstLight facility could possibly affect Shortnose Sturgeon above the dam, the overall Connecticut River population of Shortnose Sturgeon would continue unaffected."* **This is a logical impossibility: if the facility could affect the sturgeon above the dam, it would inevitably affect the overall river population. It's like saying "a reduction in the years you live in your 70s will not affect your total lifespan".**

Regarding pp. 37, paragraph 3-4:

"Other commenters point out that the barrier net is only effective with respect to fish and does not prevent entrainment of fish eggs and larvae. They believe that FirstLight should install what is known as an aquatic filter barrier (AFB) Many of these issues are potential concerns at Northfield also. Based on the stated design flow for an AFB of 0.02 fps (FERC Accession 20151202-5217), a conservative average Connecticut River depth of 20 feet, and a maximum NMPS discharge of 20,000 cfs, the calculated length of AFB required would be 9.5 miles long.

The DOI elaborated on the problem of the barrier net not being able to prevent the entrainment of eggs and larvae. The DOI stated that "in order to compensate for the unavoidable loss" of eggs and larvae FirstLight will fund compensatory management efforts intended to offset the loss of adult equivalents."⁴¹ The FFP Settlement Agreement requires an off-license Ichthyoplankton Mitigation Fund to offset the potential loss of ichthyoplankton (shad eggs and larvae) through entrainment at the Northfield Mountain Project. The agreement requires that FirstLight will make the payments to the USFWS or its designee, which will select and carry out the projects and activities. FirstLight's total contributions will be \$1,296,281 over the 50-year license term."

MassDEP: Please insist on FirstLight installing an AFB, rather than "fund compensatory management efforts". FirstLight needs to install an AFB as soon as possible, and

suspend all pumping operation until the AFB is in place. Regarding "FirstLight will make the payments to the USFWS or its designee, which will select and carry out the projects and activities": This sounds profoundly unethical: US Government entity relieves Canadian corporation for all responsibility for killing fish, killing larvae, and destroying eggs in exchange for a large payment to the regulating agency? FirstLight ITSELF needs to address the environmental destruction caused by their turbines, not kick it down the road in a money deal with a US Agency. The term "entrainment" quoted above is vague and out of context. No common definition of the term is applicable here in a public document.

Regarding pp. 33, paragraph 3:

"Construction of the Turners Falls Dam was completed in 1798 and built on a natural falls-rapids. Turners Falls is considered to be the historic upstream boundary of Shortnose Sturgeon in the Connecticut River."

Please ask FirstLight to reference the complete history of the Connecticut River when establishing a baseline for environmental standards. 227 years since construction of the dam at Peskeompskut is an extremely short period when we consider that the Connecticut River is 10,000 years old. Let's not limit our standards for the river based on only the brief period of recent colonial influence.

Regarding pp. 33, paragraph 5

"MassDEP consulted with MassWildlife and NMFS. After consultations with the Natural Heritage and Endangered Species Program, MassWildlife opined that FirstLight's proposed operations would support Shortnose Sturgeon habit and fish passage. MassDEP concurs with MassWildlife's assessment. All the evidence to date suggests a very small number of adult Shortnose Sturgeon above the Turners Falls Dam. The historical pictures and descriptions are of adult fish only, and the eDNA data are consistent with very low numbers of individuals being present. There is no evidence of spawning above the Turners Falls Dam. There is not enough information to support any determinations of whether there is a self-sustaining population(s) in the upper Connecticut or if any spawning occurs."

Since there ARE shortnose sturgeon above the TF Dam, despite the unfenced, fish-shredding, larvae-killing, egg-destroying turbines, MassDEP cannot agree with the "opinion" that "FirstLight's proposed operations would support Shortnose Sturgeon habit . . ." Mass DEP is unable to state with certainty that there are no self-sustaining populations of Shortnose Sturgeon in the upper Connecticut, and it cannot know whether or not any spawning occurs there. If the current fish-killing, larvae killing and

egg destruction was mitigated, the self-sustaining population and spawning may be more easily documented.

Regarding pp. 34, paragraph 5

"Despite the above improvements for minimum flows below the dam throughout the bypass reach, particularly below Station No. 1, some commenters have expressed concern about Shortnose Sturgeon sitings just below the dam in the bypass reach. Their concern arises out of a recent siting [sic] of what was believed to be a Shortnose Sturgeon stranded in a pool after high flow conditions abated. These commenters believe that flows should be increased to avoid this problem. MassWildlife, however, has opined that fish strandings in isolated pools below the dam occur from natural or unnatural high flow events where fish swim upstream and then as flows decrease, whether naturally or unnaturally, they are stranded in isolated pools until the next high flow event."

This paragraph appears to dodge the fact that Shortnose Sturgeon mortality is unacceptably increased by unnatural high flow events and unnatural flow decreases. There is no guarantee that the next high flow event will occur before Shortnose Sturgeon die stranded in the traditional riverbed below Station No. 1. FirstLight needs to address this killing of endangered Shortnose Sturgeon prior to any WQC being issued. They may not be "stranded until the next high flow event" but rather "dead before the next high flow event".

I support MassDEP's mission is to protect and enhance the Commonwealth's natural resources – air, water, and land – to provide for the health, safety, and welfare of all people, and to ensure a clean and safe environment for future generations. In carrying out this mission MassDEP commits to address and advance environmental justice and equity for all people of the Commonwealth; provide meaningful, inclusive opportunities for people to participate in agency decisions that affect their lives; and ensure a diverse workforce that reflects the communities we serve."

I would ask that the FirstLight 401WQC be revised to more rigorously adhere to that mission. Elements of your draft certificate intended to enhance the profitability of foreign corporation FirstLight Power Resources, Inc. should be removed from the final document. I do not believe it is in your mission to sacrifice Commonwealth resources in order to benefit FirstLight Power Resources, Inc. or its owner, the Canadian Crown Corporation "Public Sector Pension Investment Board".

Many Massachusetts soldiers paid with their lives to free the Commonwealth from the British Crown, I ask that you, like our Revolutionary citizens of 1776, free our Connecticut river from all baleful Crown influences associated with the British Monarchy, the germanic "House of Windsor" and its colonial and/or corporate proxies.

Sincerely,

Geoffrey S. Brown



South Deerfield MA 01373

2/20/2025

Elizabeth Stefanik
Attn: FirstLight 401WQC, MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114

These are my written comments regarding the Draft 401 WQC decision.

I have been a Professional Engineer for 45 years, currently licensed in Massachusetts. For the past 10 years I have lived close to the shore of the Connecticut River. In that time, I have noticed significant erosion of the eastern shoreline. The frequent and dramatic water level fluctuations of the River seem to be contributing to this problem. Over the years the water level does not seem to have any correspondence with the weather or rainfall amounts. My understanding is that the water level is determined by upstream dam releases and the operation of the Northfield Mountain Pumped Storage Facility. There are times when it is impossible to put my boat in the water.

I believe in science and following the law. The 401 draft, as it stands, does not uphold State Water Quality Standards. DEP needs to improve the certificate conditions to meet water quality standards or deny the certificate.

Mass DEP's 401 draft does not meet its burden for showing how these portions of the river will move from "impaired" status to "attainment" status under the proposed renewed FERC license.

As a boater, I appreciate that the 401 Draft Special Condition # 10 requires FirstLight to keep the river height between 178.5 and 185 ft. However, the Condition also includes discretionary events when FL is allowed to operate between 178.5-177.5 ft 30 times per year. Dropping to 177.5 is dangerous for boaters at Barton's Cove and also does not meet the designated use of the waters for recreation.

For the mile-stretch of river below Turners Falls Dam to Station 1, the proposed minimum flows of 500 cubic feet per second from July 1 – Nov. 15 each year are inadequate to protect and maintain Aquatic Life Uses, most notably impacting state and federally listed Shortnose Sturgeon, as well as sensitive macroinvertebrate populations. A minimum flow of at least 1,400 cfs from July 1 through Nov. 15 is needed to protect ALUs as well as recreation, which is currently impaired in that section of the river. FirstLight's proposed minimum flow of 500 cfs below TFD negatively impacts recreational activities, violating both state WQS and federal obligations. FirstLight's own Boating Navigability Study showed that even a flow of 545 cfs was inadequate for safe boating navigation.

According to Massachusetts WQS, Class B waters are designated not only for aquatic life uses and recreation but also for their aesthetic significance. Despite FirstLight's

acknowledgment that higher bypass flows would enhance the river's visual and auditory appeal, the proposed 500 cfs flow is insufficient to restore the river's natural aesthetic, leaving large portions of the riverbed exposed. This undermines the Connecticut River's status as a vital natural resource and a nationally recognized Blueway, emphasizing the need for higher minimum flows, such as 1,400 cfs, to meet both ecological and aesthetic standards.

Rather than base its proposed minimum flows on protecting the most sensitive ALUs, MassDEP is basing its proposed minimum flows on two non-aquatic, rare plant species that would not exist in mile stretch below TFD except for the years of impairment due to dewatering. DEP did not include any scientific evidence or classification tool for how these plants are considered aquatic.

The new eDNA data released in August 2024 that shortnose sturgeon are present above Turners Falls Dam must be taken into consideration for the 401 WQC. This federally endangered fish must be protected and the newfound research is timely as the 401 draft has yet to be published.

At the Northfield Mountain Pumped Storage facility, fish entrainment and impingement occur when water is pumped from the river to the holding reservoir. FirstLight proposed installing a fish barrier net from June 1 to November 15 to mitigate these impacts, but net's efficacy is questionable, as the velocity models FirstLight used did not accurately reflect real conditions, and only preliminary field testing was conducted, which occurred before the Flows and Fish Passage Settlement Agreement changed a few of the operational conditions. Studies show that the proposed net might not prevent fish impingement during pumping operations. I support the barrier net, but believe additional Adaptive Management Measures are needed if performance targets are not met in order to adequately protect ALUs.

Any 401 certification should include provisions mandating decommissioning plans and financial assurances from FirstLight for when the facilities are ready for retirement and removal. This measure is crucial to prevent further water quality degradation and ensure that Massachusetts taxpayers do not bear the financial burden of decommissioning.

Maintaining higher river flows would protect culturally important sites on Rawson Island and Peskeomskut Island by impeding public foot access that may otherwise cause damage to cultural artifacts. Please consider Indigenous perspectives in the relicensing process, which previously have been overlooked by regulatory agencies and are still largely being dismissed by FirstLight.

I appeal to you a professionals employed by the citizens of Massachusetts, tasked with protecting our natural environment, to perform you duties ethically and in our shared best interests.

Sincerely,
Keith H. Davis, PE
[REDACTED]
South Hadley, MA 01075
[REDACTED]

From: [REDACTED]
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/23/2025 5:10:25 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

If the NMPSP is relicensed, then lawsuits against MassDEP and FirstLight in state and federal courts may be the only recourse with teeth for citizens who want the Federal Clean Water Act to be effectively enforced.

Nonetheless, certain facts should be established and entered into the permanent public record before a final decision is made in this matter.

On page 28, FirstLight intimated that the Northfield Mountain Pumped Storage Plant (NMPSP) is needed to “support additional or sustained activation of energy reserves in New England to address any fuel supply-related or other contingencies that may arise” and to “respond to other unforeseen system emergencies, which FirstLight contends will become more important with increased grid reliance on renewable energy sources.”

First, by draining the upper reservoir by an additional 18', NMPSP can only mitigate any “fuel supply-related ... contingencies” by an extra 2 hours of generation time. If no more fuel is forthcoming that day, NMPSP won't be able to further address any “contingency”.

Second, FirstLight vaguely asserts that, although response to “unforeseen system emergencies” caused by “renewable energy resources” isn't important now, it will become more important in the future.

Because FirstLight is using these intimations to justify their request to immediately boost storage, generation, and revenue by 25.0%, MassDEP should first definitively establish the plant's present mode of use on today's electric grid, which is a matter of historical record.

The original purpose of the NMPSP when it went online in 1973 was to absorb otherwise unusable or unprofitable nighttime energy production from the Vermont Yankee (VY) nuclear power plant; it was difficult to reduce the output of VY at night, when load drops. VY is now closed, and so the original justification for NMPSP no longer exists.

Although, on page 28, it's reported that “In its typical operations, the Northfield Mountain pumped storage facility does not regularly cycle the full Upper Reservoir up and down on a daily basis”, NMPSP is not usually, I think, storing energy during the daytime hours, as it would be if it were complementing “renewable energy sources” like solar. I think that NMPSP is now being used to generate its substantial profits by using it as a dominantly-natural-gas-powered peaker plant to provide expensive

power to the grid during daytime hours, while usually storing inexpensive energy from other generation plants at nighttime. NMPSP's advantage as a peaker plant is mainly that it is a large (> 1 GW) plant that is already built. Some of its disadvantages are that it has much lower efficiency (overall efficiency = 0.7 fossil generation x 0.7 NMPSP = 0.5 overall; this is 30.0 % lower than for a conventional fossil fuel peaker plant) and, consequently, much higher fuel consumption (30.0 % higher) than for a conventional peaker plant. MassDEP should ask ISO NE whether NMPSP is being used as a "daytime peaker plant", and, if so, this fact should be entered into the public record.

As noted on page 16, it has been reported "that the river flows backwards at times". MassDEP should require FirstLight to supply the following related information for placement in the public record:

1. What is the distribution of times of day when pumping has occurred for the past 2 years?
2. What is the distribution of times of day when release/generation has occurred for the past 2 years?
3. Does the river flow backward due to NMPSP operation at any time, either upstream or downstream of NMPSP?
4. If so, where, and for how long?
5. What is the maximum speed of backward flow, especially during times of low river levels?

These questions should be answered by FirstLight, and their answers placed into the public record now.

From page 28, FirstLight's proposal "provides that FirstLight would operate the Northfield Mountain Pumped Storage Project upper reservoir between elevation 1004.5 and 920.0 feet. This is a proposed increase of 3,000 acre-feet, from the current range between 1000.5 and 938 feet." This is equivalent to increasing charging cycle energy and operating time (and revenues) by 25.0 % in one fell swoop. FirstLight justified this request by saying that the increased range "will improve FirstLight's ability to respond to other unforeseen system emergencies, which FirstLight contends will become more important with increased grid reliance on renewable energy sources."

First, while I agree that energy storage facilities may someday be needed to complement renewable energy sources, I doubt that any "unforeseen system emergencies" caused by "renewable energy sources" have yet occurred. The lights stayed on even when the NMPSP was offline in 2010 for 6+ months, and in the fall of 2023 for 3+ months. Furthermore, I doubt that NMPSP has been helping mitigate any mismatches between generation and load caused by "renewable energy resources", because I'm pretty sure that NMPSP usually pumps at night and releases during the day – THE TIME OF DAY WHEN SOLAR GENERATION IS HAPPENING. But you don't have to believe me. ISO NE can definitively confirm whether NMPSP has helped ISO NE mitigate any "unforeseen system emergencies" caused by "renewable energy sources". Just ask them. ISO NE should weigh in on this before FirstLight is given permission to increase throughputs and profits by 25.0 %. Ask ISO NE about this now.

Second, this increased range of operation has only been allowed by exception in the past, so we have no significant practical experience with it. As MassDEP noted on page 29,

“The FERC ruling, however, was limited to the temporary nature of the amendment. It stated: “However, as we concluded in the 2015 Amendment Order, it continues to be difficult to determine based on the available information to what extent unrestricted modifications to project operations occurring over a succession of winters during the relicensing proceeding, could affect existing erosion, bank stability, or water quality.”

The data and simulation results regarding TFI levels that FirstLight provides in Appendix B FERC do not even come close to specifically addressing this “difficult” question. In my opinion, the question of “... to what extent unrestricted modifications to project operations occurring over a succession of winters ... could affect existing erosion, bank stability, or water quality” remains unanswered. If the increased operating range is allowed, it may increase the average and peak concentrations of silt in river water, and might ultimately lead to a recurrence of the catastrophic unscheduled NMPSP shutdown due to silt jamming the turbines in 2010. If FirstLight begins to routinely drop the level in the upper reservoir by 18 feet more than it has in the past 50 years, it will be more at risk of literally “scraping the bottom” of the upper reservoir - either during normal operation, or by accidentally exceeding the approved range and going below the 920.0 foot limit. Has MassDEP determined whether the concentration of silt in river water or turbidity will be increased by this change in operation range? Has MassDEP determined whether the frequency or likelihood of discharge of “slugs” of silt into the river will be increased by this increase in operation range? But MassDEP should not take my concerns at face value.

MassDEP should revisit this “difficult” issue with FERC, rather than unilaterally expanding FirstLight’s operation range permanently. Ask FERC about this now.

At this juncture, apparently no one is arguing anymore about whether the massive pressure transitions seen in transit through the turbines exterminate aquatic wildlife. These pressure transitions are very large; I believe that the Inlet-to-outlet pressure step at turbines during full output is about 450.0 psi, and I suspect that the peak pressure transition rate may exceed 2000.0 psi/second. However, the following operating parameters should be disclosed by NMPSP and placed into the public record:

1. Inlet-to-outlet pressure step at turbines during full output (psi)
2. Peak pressure within turbine (psi)
3. Peak pressure transition rate (psi/second)

This information should be provided by FirstLight, and placed into the public record now.

Although the extermination of entrained wildlife by extreme turbine pressures seems to be the dominant environmental cost of the power plant, NMPSP may be having another important environmental impact on river and associated wildlife – pouring heated water into the Connecticut River. First, NMPSP heats water during both

pumping and release due to turbine losses. I will make a wild guess here that the heating power attributable to turbine losses may be approximately 0.1 GW for 8 hours while pumping, and the same during release, for a total of 1.6 GWh of heating energy per charge/discharge cycle. Second, during warm months, upper reservoir water is warmed during any rest time before pumping. Although, from page 6, "Class B waters are also suitable for ... compatible industrial cooling and process uses," these heating effects should be quantified and reported to MassDEP, and MassDEP should place this information into the public record now.

MassDEP should have its own experts confirm that the pressure steps discussed above are the dominant mechanism for killing fish and other wildlife during turbine transit; if necessary, experts at the Silvio O. Conte Anadromous Fish Research Center in Turners Falls should be consulted to confirm this. MassDEP should place these reports into the public record.

Given the above pressure information discussed above, MassDEP should have wildlife biologists quantify NMPSP's turbine entrainment impact on fish: % fish killed per round trip turbine transit, number of fish presently killed per year, and if the river were allowed to recover for a year or two, the expected number of fish that would be killed per year at outset if operation were re-started after recovery. MassDEP should also have wildlife biologists quantify NMPSP's environmental impact on fish, if any, due to any increase in turbidity and silting, and water heating.

From page 37, "The DOI elaborated on the problem of the barrier net not being able to prevent the entrainment of eggs and larvae. The DOI stated that "in order to compensate for the unavoidable loss" of eggs and larvae FirstLight will fund compensatory management efforts intended to offset the loss of adult equivalents."⁴¹ The FFP Settlement Agreement requires an off-license Ichthyoplankton Mitigation Fund to offset the potential loss of ichthyoplankton (shad eggs and larvae) through entrainment at the Northfield Mountain Project. The agreement requires that FirstLight will make the payments to the USFWS or its designee, which will select and carry out the projects and activities. FirstLight's total contributions will be \$1,296,281 over the 50-year license term." That's an average of \$26K per year, and, considering inflation, only \$7K per year in 2025 dollars in the final years of the term. This is a pittance for such a company, and a slap in the face for Massachusetts citizens. If this comes to pass, we will have to wait to see whether the Fund provides any environmental benefit.

FirstLight originally proposed that the deployment of the barrier net be delayed until year 5, then later backed that off to year 7; MassDEP is now asking for deployment in 5 years, after an expert commentary disclosed that such deployment was accomplished in only 3 years - for a more demanding situation - in Washington state. FirstLight's proposed schedules reveal an inadequate commitment by FirstLight to environmental protection.

In my opinion, the NMPSP was poorly designed at its conception, without any regard for environmental impact. To be viable, the Project should have been designed as a closed-loop system, and been built with a dedicated lower reservoir, so that fish in the

Connecticut River wouldn't be exterminated during each pumping/generation cycle, as they have been since 1973. A lower reservoir would also have prevented any riverbank erosion by the Pumped Storage Project operation. If a lower reservoir wasn't feasible, the project should not have been built at all.

If the NMPSP is relicensed, all of FirstLight's offerings of recreational facility improvements, barrier nets and any other abatements will be meager compensation and mitigation in light of the enormous environmental damage the NMPSP will do to the river's aquatic life and riverbanks over the next 50 years.

Now, only one of the two following courses of action should be taken:

1. A lower reservoir, with capacity matching that of the upper reservoir, should be designed and built, or, if this is not feasible,
2. The Pumped Storage Project should be closed, and gradually be replaced with additional solar generation capacity, if additional daytime generation is necessary. At worst, even a conventional gas-powered turbine peaking plant would use 30% less fuel than NMPSP, cause 30% less air pollution than the use of NMPSP, and completely eliminate the environmental degradation of the Connecticut River caused by NMPSP turbine entrainment of wildlife and unnatural water level fluctuations.

Again, if the NMPSP is relicensed, then lawsuits against MassDEP and FirstLight in state and federal courts may be the only recourse with teeth for citizens who want the Federal Clean Water Act to be effectively enforced.

Sincerely,

Robert L. Dickerman

[REDACTED]

Northfield, MA 01360

[REDACTED]

February 22, 2025

Re: FirstLight 401 WQC

Dear Elizabeth Stefanik,

I'm writing to comment on the proposed FirstLight 401 WQC to express my concerns about the relicensing. My name is Laren Droll and I reside in Greenfield and make frequent trips to Turners Falls for recreational activities and walks along the river. Nature is important to me, and it is obvious to see that Firstlight operations have had a serious impact on the river's Aquatic life, aesthetics and recreational value.

The dried up river bed below the dam is a sore sight to see, and my hope is that a more natural flow of water be mandated in the license to address the aesthetic issues. The proposed flow of 500 cfs from July 1 to November 15 would severely restrict much of the aquatic life and do little for the aesthetics. I attended a DEP meeting presenting an earlier FERC draft and learned that some endangered grasses were growing in the dried up riverbed, and Firstlight asserts these are aquatic life to be protected by limiting river flows. This argument does not convince me because the habitat for these grasses was a result of firstlight operations that dried up the riverbed. I feel it is more important to protect the fish and aquatic life that would be present if the river was returned to a more natural state with adequate flows.

My understanding is that the river status is impaired and fails to meet state Class B water quality standards. My wish is that Firstlight be required to bring the river up to meet the Standard. Given the likely future impacts of climate change I think that higher standards be required of Firstlight as a bulwark against these changes. I fear that minimal standards will likely cause even greater harm in the future.

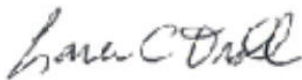
Another concern of mine is the impact of the Northfield Mountain pump station which causes great fluctuations of river level causing severe river bank erosion. This not only impacts aesthetics, but I expect it impacts aquatic life along the shoreline.

February 22, 2025

Lastly, I have concerns about future decommissioning of Firstlight facilities. Who will be stuck to foot the bill? Hopefully this would not be left to the taxpayers. Could this be spelled out in the license?

In closing, please know that I appreciate the years of work you have put into developing the draft proposal. I respectfully request you take my concerns into account to further modify the license.

Thank you!

A handwritten signature in cursive script, appearing to read "Laren Droll".

Laren Droll

[REDACTED]

Greenfield MA

[REDACTED]

From: [june drucker](#)
To: dep.hydro@mass.gov
Subject: Firstlight 401WQC
Sent: 2/24/2025 12:07:48 PM

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Dear Ms. Stefanik and members of the Mass DEP commission,

I'm writing to submit comments in response to the Mass DEP 401 draft that has been proposed for Firstlight's permit renewal application.

My name is June Drucker, and I live in Greenfield. I am also a stakeholder in property located in Turners Falls, adjacent to the Connecticut river. I appreciate the effort that DEP has put into the 401 draft however I feel it is too lenient and will not uphold the state's water quality act and it's goals.

First off I feel that 50 years is way too much time in which to grant a permit. Three quarters the people granting this permit will not even be around in 50 years and there will be so many technological and environmental changes in that amount of time that there's no way this makes any sense to me.

I feel the volume of water below the dam does not support aquatic life. 500 cfs is not enough in spawning and migration season.

Also there are native American artifacts in the river and when the water is so low people are coming in and pilfering them. To protect the site, it should be submerged.

I am also concerned about the effect of the pumping station on the river. Pulling the water 2 miles upstream when the turbines are running is detrimental to the river, not to mention all the fish that are getting chewed up and spit back out. The DEP proposal for the net has not been tested for protecting the shortnose sturgeon. I feel that the implementation schedule is too far out and should really happen immediately. There may be no fish left in seven years.

A closed loop system would solve the problems of fish mortality and erosion happening along the riverbanks.

Thank you for hearing and attending to my concerns. Please do the right thing for our community.

Respectfully submitted,

June Drucker

From: [Lois Gagnon](#)
To: dep.hydro@mass.gov
Subject: First Light Pumped Storage Station
Sent: 2/24/2025 4:33:46 PM

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I am writing to urge MaDEP to deny the Water Quality Certificate for First Light Pumped Storage facility in Northfield, Ma. This plant is not a legitimate strategy in the state's climate change mitigation. It uses, as you know, more energy from the dirty energy grid to drag the river backwards and up through the turbines in the hollowed out mountain than it generates pushing the captured river water back down into the river bed. This is nothing but a money making scam that has been destroying the ecological integrity of the river for more than 50 years, violating the Clean Water Act for its entire existence.

This plant has absolutely no redeeming value to anyone. Not even for the Canadian pensioners whose investments include First Light. When we destroy the natural world for profit, we destroy our humanity.

Stop pretending this is the best you can do for the river as the state's environmental regulator because you don't want to face a lawsuit by First Light. That is not a justifiable reason. This makes no sense as both you and First Light will be violating long established environmental law if the plant is relicensed. That would set you both up for being sued.

It's long past time this plant was shuttered. Stop giving the public lame, embarrassing excuses why you can't do your job. We are tired of hearing them. Deny the WQC. Shut it down!

Lois Gagnon
Belchertown, Ma
Sent from my iPad

From: [Arlie Gould](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC"
Sent: 2/10/2025 2:59:45 PM

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Hello Mass DEP,

I am following this First Light Hydro Power Plant relicensing process as a NON expert. I have learned how terrible the dam is for the river, the fish, the river banks, the people who use the river. I remember a meeting where a man shared what a 14 year old girl had said about the dam "It takes in life, and spews out death" talking about the fish in the river.

So I ask the experts to make this aspect of First Light's process MAXIMALLY SUPPORTIVE of the people in the communities, the wildlife in the rivers and the river itself. First Light is a multinational corporation with legions of lawyers and accountants... they can take care of themselves.

Thank you,
Arlie Gould
Amherst, MA

From: [David Greenberg](#)
To: dep.hydro@mass.gov
bonnie.Heiple@mass.gov; timothy.Jones@mass.gov;
david.Hilgeman@mass.gov; melissa.Hoffer@mass.gov;
Cc: stephanie.Cooper3@state.ma.us; jesse.leddick@mass.gov;
caleb.slater@mass.gov; paul.L.Jahnige@mass.gov; [Blais, Natalie - Rep. \(HOU\)](#); [Mark, Paul \(SEN\)](#);
Subject: FirstLight 401 WQC
Sent: 2/20/2025 7:27:48 PM

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To Whom It May Concern:

I unequivocally do not believe that the Northfield Mountain Pumped Storage Station (NMPS) can operate within the mandates of the Clean Water Act. The first licence was granted before the Clean Water Act took effect. The Clean Water Act, among other things, requires no interference with the natural flow of waterways. NMPS clearly does not meet this requirement!

DEP's mission, according to its website, is "to protect and enhance the Commonwealth's natural resources—air, water, and land, to provide for the health, safety, and welfare of all people, and to ensure a clean and safe environment for future generations". This clearly implies that the license should not be granted to the NMPS.

The multinational owners of the NMPS are responsible only to their shareholders. Their only interest is to make as much money as they can as easily as they can. The quality of the water - irrelevant; the killing of the fish - irrelevant; the erosion of the river banks - irrelevant; the destruction of the Connecticut river valley - irrelevant.

NMPS is a false solution to our Climate Emergency. It is dirty energy and does not bring us closer to Net Zero by 2050. Please, please do the right thing and shut this facility down!

Thank you for your consideration.

Sincerely,



David Greenberg
 Colrain, MA

From: [Katharine Gregg](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401C WQC
Sent: 2/24/2025 1:42:17 PM

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Hello,

I'm a resident of Amherst. For me the Connecticut River is one of the most important assets in this area, for its beauty, its water and its wildlife. I'm concerned about the relicensing of the Turners Falls Hydroelectric Project and the Northfield Mountain Pumped Storage Project and the ways these projects affect the river depth through sedimentation and especially the migrating fish. I understand that there is a ten-year timetable for improving fish passage. I urge that timetable be speeded up to five years.

Section 401 of the Clean Water Act gives the state the ability to set standards for water quality. Not only is this essential for maintaining appropriate habitat for fish and other aquatic animals; it is important in irrigation for agriculture and for the beauty and recreational use of the river. We are in a time of vastly increased danger to the environment and greater awareness of that danger. Please weigh these considerations as you approach the relicensing of these projects.

Sincerely,

Katharine Gregg



Amherst, MA 01002

From: [Tamara Grogan](#)
To: dep.hydro@mass.gov
Subject: First Light 401 WQC
Sent: 2/15/2025 7:07:52 AM

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The hydro project at Northfield Mountain should be shut down once and for all. How in the world does it make sense to use that much energy to pump water up a mountain so that you can let it back down, disrupting the ecosystem, killing the fish, and eroding the riverbank? Everywhere else in the region is trying to protect and preserve the environment. The project is an anachronism and an embarrassment to an otherwise proudly conservationist state. It should not be relicensed.

Tamara Grogan
Greenfield MA

From: [Linda Harris](#)
To: dep.hydro@mass.gov
Subject: Section 401 of Clean Water Act
Sent: 2/24/2025 4:00:14 PM

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To Whom It May Concern:

I urge tighter control of river depth at Turner's Falls to reduce impact on species that live there and on humans who use it for recreation. The timetable to improve fish passage should be speeded up—within at most five years, not 10!

Thank you for considering my input. We love the river and have lived near it and used it for swimming and canoeing and kayaking for many years.

Linda Harris

Feb 23, 2025
RE: FirstLight 401WQC comments

Dear Elizabeth Stefanik:

Thank you for the opportunity to comment on DEP's draft Water Quality Certificate (401WQC) for relicensing FirstLight's Dam at Turners Falls and the Northfield Mountain Pumped Storage on the Connecticut River.

I am deeply concerned that the Connecticut River Conservancy and others have determined that the provisions in the DEP's draft 401WQC will not bring the river into compliance with the state water quality standards, and that new information about the shortnose sturgeon has not been included. I am depending on you, the MA DEP, to ensure we have a healthy river!

Who I am: I am a boater, nature lover and resident of Greenfield, MA. I have been concerned about the health of our planet my entire life from the threats of nuclear war in the 1950s, to the climate and biodiversity crises of today. My career focused on reducing fossil fuel use and promoting renewably-produced zero-carbon electricity as a builder of solar homes in the 1980's and then the director of the Northeast Sustainable Energy Association (NESEA) and the Tour de Sol, a road-rally event that demonstrated that eclectic vehicles recharged by renewably-produced electricity was possible and desirable. I am now retired, and an active member of Greening Greenfield.

Because of my career, I understand the value of pumped storage as necessary to grow the zero-carbon energy portion of our electricity, but biodiversity and the health of our river is equally important. The Northfield Mountain project design, which uses the Connecticut River as its 'lower reservoir, is not acceptable. If proposed today the project would not be permitted.

I am requesting that the 401WQC include the following conditions:

- 1) A rigorous scientific monitoring plan and oversight by local stakeholders and experts.
- 2) Raising the summer flow below the Turners Falls Dam to 1400 cfs instead of 500 cfs to ensure the health of all Aquatic Live Uses.
- 3) Updated plans that protect the shortnose Sturgeon, a federally endangered species
- 4) Creation of a decommissioning fund - an environmental necessity.

1. Request for a monitoring plan and oversight:

This request come from my first-hand experience as a canoeist on Barton's Cove since 1980. When I put my canoe in at Barton Cove Boat Ramp, I usually paddle left to the plunge pools and follow the shoreline, on the left side of the island that had an eagle's nest in it for years and then continue along that shore upstream toward the French King bridge.

In recent years that route has become impassable due to accumulated silt. While I recognize that silt will collect upstream of any dam, the rapidity of that accumulation has been stark. In listening to landowners along the river, it is clear that erosion has been excessive since the Northfield Mountain facility started operating. While FirstLight has attempted mitigating that problem, those efforts have not been successful.

I therefore request that the 401WQC include a condition that a rigorous modern scientific monitoring plan and oversight of the plan and monitoring be done in collaboration with local stakeholders and experts a condition of the WQC.

2. Flow below the Dam: Rare Plants, Aquatic Life Uses, and Boating – finding a better compromise

For the last 15 years since retiring I have focused on building native habitat, and have learned much about native plants. As such, I read with interest about the two rare plants found on the riverbanks below the Dam, and the desire to not disrupt them.

I have learned that these plants have taken hold over the past 50-years because the river has been dewatered! So the question is, do we perpetuate the unnatural flow the river because of these plants? OR do we aim to restore the river to support all the aquatic life that thrived before the dam was built? I have also learned that FirstLight's own Boating Navigability Study showed that a flow of 545 cfs was inadequate for safe boating navigation.

I feel that Fish and Wildlife's recommendation of summer river flows of 500cfs minimum is too low. While I recognize 500cfs is four times as much as the 140 cfs minimum flow requirement over the past 50-years, it is NOT a good compromise between traditional water flows and 140cfs.

Please reassess Fish and Wildlife's research that led to their recommendation of 500 cfs, and raise the minimum flow substantially to benefit ALL aquatic life, and support recreation. Please make the Connecticut River Conservancy's recommendation of 1400 cfs for summer flows between July 1- November 15 a condition in the 401WQC.

3. Updated plans that protect the shortnose sturgeon, a federally endangered species

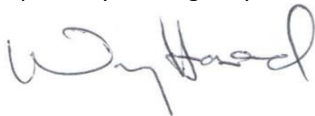
As you know, in 2024 eDNA of shortnose Sturgeon was found above the dam. This NEW data must be considered by FirstLight. Please make updated plans to protect this federally endangered species a condition of the 401WQC.

4. A Decommissioning Fund – an Environmental necessity

Returning the area to a healthy river system is a responsibility of FirstLight and a key environmental concern. This will be expensive but necessary. The 401WCQ should make the establishment of a decommissioning fund a condition of the certificate. A draft plan and estimate must be made now in collaboration with local stakeholders and experts, to estimate the size of the fund and annual payments into that fund.

Thank you for taking the time to read my comments. I am depending on you to safeguard our river! Our lives and all the critters the Connecticut River ecosystem and beyond depend on it!

Respectfully and urgently,



Nancy Hazard

Greenfield, MA 01301

Retired director of the Northeast Sustainable Energy Association (NESEA)
Member, Greening Greenfield, www.GreeningGreenfieldMA.org

cc.

MA Senator Jo Comerford
MA Natalie Blais

From: [Frances Henry](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401WQC
Sent: 2/22/2025 9:25:38 AM

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Dear Folks,

I have lived near the Connecticut River for more than 40 years. What a river to live near! Every season produces beauty and bounty.

I know you are deciding whether to relicense the First Light. I would like you to give human and species continued support for their enjoyment (human) and species (for life).

Please do make certain that the habitat for human and species is as ideal as we can make it. Many thanks for your consideration. Frances Henry Amherst MA

From: [Ann Hooke](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/21/2025 12:33:04 PM

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Dear Dept of Mass Hydro,

I have had connections with the Connecticut River Valley since I was a student at Smith in the 50's and 60's. I now live in Amherst. Being a geologist, I am particularly interested in the physical health of the river as it impacts many natural systems. Of course, it is also important for historical, cultural and recreational purposes which I value.

I am most concerned about the management of water flow and depth at Turners Falls. It is important for migrating fish, for recreationists, for the integrity of the whole river system at and below the control area that the depth not be changed abruptly. The sudden release of water causes additional sedimentation downstream, challenges the needs for consistency by agricultural users, and reduces the attractiveness of the shoreline for recreational purposes (including fishing and boating). Probably the most damaging aspect of these practices is on the migration of fish species on the river, and the slaughter of fish in the turbines.

It is imperative that the timetable to improve fish passage be enacted within at most 5 years (not 10).

Thank you for considering my comments.

Ann Hooke

From: [Martha Jorz](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/9/2025 5:20:35 PM

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Elizabeth Stefanik

I encourage you to put plans in place for shutting down all FirstLight facilities as soon as possible. The vitality of the Connecticut River depends on eliminating all dams and pumping facilities on the river.

Martha Jorz

Sent from Proton Mail Android

From: [Laura J. Kaye](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/24/2025 9:16:20 AM

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Greetings:

I am a member of Connecticut River Defenders, a grass-roots group of people who came together in opposition to the re-licensing of Northfield Mountain Pumped Storage Station. We would all rather be doing something other than fighting what has seemed like an uphill battle to keep our river from continuing to be subjected to the abuse that this facility perpetuates, but we have persisted as we recognize the importance of the Connecticut River to the health of our ecosystem.

By now I would imagine that you have received many comments from members of the community both here on your website as well as at your two public meetings (10/10/24 and 2/19/25). Having attended both meetings in person, I saw that a cross-section of the local citizenry was there. There were elected officials; employees of environmental agencies, fishermen, land owners and others. Some of them clearly had the time and means to carefully study in detail the nuances of the laws regarding clean water and have become expert in articulating their conclusions about what is at stake, while others had relied on summaries of factual information to form their opinions.

One would think that, if the science were fuzzy about the effects of NMPS on the river, that some of these citizens would have spoken in favor of your Draft WQC, yet at the hearings where people bothered to come out to testify, not a single person spoke in favor of it without significant amendments or changes. It's difficult, therefore, to avoid concluding that there must be some pressures coming into play on our state agencies, whether political or bureaucratic, that have little to do with a commitment to the health of the Connecticut River.

Please do take our comments seriously. You asked for them, we have freely given them to you.

Sincerely,

Laura Kaye

Northfield



Virus-free www.avast.com

From: [Anya Klepacki](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/24/2025 4:35:21 PM

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Dear Massachusetts Department of Environmental Protection,

We are a group of people living in the Connecticut River watershed. Some of us were born along the banks of the river, others arrived here later, but all of us reside in and with the ecosystems this river creates and sustains.

It is our proximate desire to have the WQC denied and for the DEP to request FERC to end the annual license extension. Ultimately, we wish to see the entire ecocidal monstrosity that FirstLight operates and profits from be decommissioned and that the river be allowed to flow freely, to reach levels where it can once again meander through wetlands, directed by beavers, and made resilient once more to face a changing climate. Wetlands will be crucial reservoirs of life during the coming droughts, and letting the river flow freely will support them.

The Northfield Mountain Pump Storage facility reverses the flow of the largest, most ecologically important river in the entire region by forcing billions of gallons of water through turbines that kill all macroscopic life. Worse, the energy used to facilitate this ecocidal process is predominantly fossil fuel in origin. The water, after warming in the sun, is then released to generate a mere portion of the original energy used. This release is not timed so as to provide an emergency backstop for an otherwise collapsing grid, despite the claims of its operators. It is released when it is profitable for FirstLight, wholly owned by a Canadian Crown corporation. Only in a world that renders a living ecosystem into an inert “conveyor belt” (to use the DEP’s own language from the draft WQC) could a Canadian Crown corporation be considered a legitimate “stakeholder” in this matter, but since that is the world that we live in, we find it necessary to call into question the operating principles and motives of this corporation. They exist to make money, they do not exist to bolster the energy security of Massachusetts nor the ecological health of the Connecticut River watershed.

And the “thing” they make money off of is a living, dynamic ecosystem. An ecosystem that FirstLight does literally nothing to support. There is no reciprocity in their relationship with the river, a river that sustains us and is the foundation of life here. They “provide” tax revenues to a handful of municipalities, but those revenues merely represent a fraction of what FirstLight takes from this river. To return a portion of something that was taken is neither generous nor reciprocal. This is naked extractivism, and there is absolutely nothing environmentally sound about it. Any attempt to cast it as such, including by the governor herself, is little more than greenwashing. You are the Department of Environmental Protection. Act like it. Deny the water quality certificate and request FERC to end the annual license extension.

The grounds upon which to deny the WQC are numerous. The portions of the Connecticut River both above and below Turners Falls Dam (TFD) are currently listed as impaired (not meeting state water quality standards) for various reasons, including dewatering, flow regime modification, and streamside alteration—impairments that are attributable in whole or in part to the operations of the FirstLight Projects. Mass DEP’s 401 draft does not meet its burden for showing how these portions of the river will move from “impaired” status to “attainment” status under the proposed renewed FERC license, nor does it adequately put the monitoring power in the hands of affected communities and organizations whose primary motivations are assuring

the health of the river and the wider regional ecosystem, rather than making a profit from it.

The Turners Falls Impoundment (TFI) experiences significant fluctuations in river height due to the Northfield Mountain Pumped Storage facility ("NMPS"), leading to severe shoreline erosion. This 20-mile stretch of the Connecticut River, serving as the lower reservoir for the storage facility, suffers from erosion exacerbated by the facility's operations, which vary the water level by up to five feet. Historical data and studies, including reports by the Army Corps hired expert, Dr. Evan Detheir, confirm that the pumping activities are a significant cause of the erosion. The 401 Draft Special Condition # 10 requires FirstLight to keep the river height between 178.5 and 185 ft. However, the Condition also includes discretionary events when FL is allowed to operate between 178.5-177.5 ft a shocking 30 times per year. Dropping to 177.5 is dangerous for boaters at Barton's Cove and also does not meet the designated use of the waters for recreation.

For the mile-stretch of river below TFD to Station 1, the proposed minimum flows of 500 cubic feet per second ("cfs") from July 1 – Nov. 15 each year are inadequate to protect and maintain Aquatic Life Uses (ALUs), most notably impacting state and federally listed Shortnose Sturgeon, as well as sensitive macroinvertebrate populations. 500 cfs will allow for only 10% of maximum available habitat for macroinvertebrates, among other indicators of not supporting this use. A minimum flow of at least 1,400 cfs from July 1 through Nov. 15 is needed to protect ALUs as well as recreation, which is currently impaired in that section of the river.

Rather than base its proposed minimum flows on protecting the most sensitive ALUs, MassDEP is basing its proposed minimum flows on two non-aquatic, rare plant species that would not exist in the mile stretch below TFD except for the years of impairment due to dewatering. Additionally, DEP did not include any scientific evidence or classification tool for how these plants are considered aquatic. Further, DEP fails to include any information about whether the plants can be transplanted to another location or if that option has even been evaluated. DEP and other state agencies, such as the Natural Heritage Endangered Species Program (NHESP), must make more information available to allow the public to make informed comments about the plants and for DEP to adequately consider their relevance, if any, to FirstLight's 401 Application.

The new eDNA data released in August 2024 that shortnose sturgeon are present above Turners Falls Dam must be taken into consideration for the 401 WQC. This federally endangered fish must be protected and the new found research is timely as the 401 draft has yet to be published. This crucial piece of information must not be left unattended to. One example is for the Barrier Net - no scientific studies of the efficacy of the Barrier Net for sturgeon have been completed.

Further absent are any provisions mandating decommissioning plans and financial assurances from FirstLight for when the facilities are ready for retirement and removal, which should be soon. This measure is crucial to prevent further water quality degradation and ensure that Massachusetts taxpayers do not bear the financial burden of decommissioning. Given the inevitable end of these projects' useful lives as energy producers and reserves, we wish to stress the importance of ensuring that funds for decommissioning are readily available.

Licensing, if at all, should be a maximum of 15 years. According to the Fourth National Climate Assessment put out by the U.S. Global Change Research Program ([https://urldefense.com/v3/https://nca2018.globalchange.gov/chapter/18/!CPANwP4y!T2xi7O1V7h1Lac56soyLfhO5RvIV_rP4ouFfW8NGKKSVyrrZHkNRqURIAn_kwPAOoc750ESmSrbzCUjdjhWh5CE\\$](https://urldefense.com/v3/https://nca2018.globalchange.gov/chapter/18/!CPANwP4y!T2xi7O1V7h1Lac56soyLfhO5RvIV_rP4ouFfW8NGKKSVyrrZHkNRqURIAn_kwPAOoc750ESmSrbzCUjdjhWh5CE$)), the Northeast is projected to be more than 3.6 degrees F warmer on average than pre-industrial times by 2035, as the Northeastern US is warming faster than any other region in the lower 48 states. This rise in average temperature negatively affects aquatic life by raising the

temperature of the river, increasing mortality throughout the seasons, and especially during heat waves. The rising river temperature is further compounded in shallower waters, which is necessarily tied to the periodic pumping of the Northfield Mountain Pump Storage facility, as well as is the case below the Turners Falls Dam. It would be egregiously irresponsible to re-license these operations for the proposed 50 year period, as this entirely negates the reality that we will be experiencing drastic changes in our regional climate early on in this timeframe. Operations that demonstrably negatively affect the health of the river ecosystem that our entire valley is built around should not be given carte blanche permitting for "business as usual" operation for a full 5 decades into the future against the backdrop of changes we already anticipate, and know will be exacerbated by their usual operations. If any re-licensing is at all considered, a maximum of 15 years should be licensed, allowing the State to be nimbly adaptable to the changing circumstances we are up against, for not just the health of the river, but the health and resilience of the entire region.

We appreciate your time in reading this. Ultimately, as the Department of Environmental Protection, we are merely asking you to live up to your name. The health of our communities, our bioregion, and resilience into the future are what is at stake. Thank you.

Anya Klepacki
New Salem, MA

From: [Miriam](#)
To: [DEP Hydro \(DEP\)](#)
Subject: FirstLight 401 WQC
Sent: 2/16/2025 8:00:49 PM

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We are extremely disappointed by the state of Massachusetts's Department of Environmental Protection (DEP)'s draft decision to approve the Draft Water Quality Certificate (WQC) for the next 50 years for many reasons. The DEP has clearly sited numerous problems that the Northfield Mountain Pump Storage Station (NMPS) has caused for the Connecticut River. Especially now, that we no longer have any federal protections for environmental or ecological well being, we need our state agencies to do all they can to defend our land, waterways and air. Allowing this truly troubling operation to continue for another 50 years is an affront to the living river and the health of our ecosystem for generations to come. We ask you what will be done when FirstLight fails to take the actions you are providing recommendations for? Who will be monitoring the river to make sure they are completing every recommendation to perfection? What happens if they do comply but the river and its ecosystem continues to be damaged by these enormous turbines? We urge you to take on the huge task of denying the WQC in a bold effort to work with the public who expects you to completely stand up to these corporate giants who care more about profit than what's best for our communities and planet. Here are a number of issues that are extremely concerning:

1. FirstLight's NMPS is not clean energy. It plugs into the grid, like any household appliance, with a force strong enough to manipulate the river using 4 huge reversible turbines. These turbines pump the river backward several miles and 800 ft up to the man-made mountain top reservoir. Primarily using fossil and nuclear fuels, it pumps enormous amounts of water (using one third of the energy that it creates when water is released), killing all river life forced through the turbines. It damages the ecosystem while causing erosion to the surrounding shore. Even if they were to use clean energy in pumping up the river, the damage they are causing makes their impact unsustainable.
2. FirstLight uses an open loop pumped storage system which uses a living river as its bottom reservoir, in this case a 20+ mile stretch of the river between Great Falls (Turners Falls) dam and Vernon Dam in Vt. This causes grave environmental harm and death to countless numbers of fish species, fish eggs and aquatic life - estimated to be in the 100 million of fish per year that get entrained in the process with no chance of survival as they are pulled on the deadly journey up and down the mountain. The relentless harm to the river ecosystem

including people relying on the fish for food is unacceptable in this time of climate change and biodiversity emergency. The unnatural dramatic manipulation of the river water levels, through the drag and surge, leads to erosion of the banks, affecting agricultural lands, fish spawning areas and damage to indigenous historic and traditional sites. Silt dragged from the river bottom has effects on water quality diffusing sunlight and oxygenation.

3. FirstLight has not been a responsible steward of the land or river and has presented incomplete analysis in reports of the impact of the NMPS on the river. Studies completed by FirstLight skewed results looking only at a single year and choosing and deleting aspects to include and omitting details needed for thorough analysis.

4. The adjustments mentioned in the WQC would be experimental. There is no guarantee that these will all be done appropriately nor that they will stop the problems that NMPS is causing. In addition, the time allotted for the changes to occur will result in more damage at a time we cannot afford worsening our already damaged environment

5. FirstLight is owned by one of Canada's largest pension investment managers, Public Sector Pension Investments (PSP), part of the Treasury Board of the Canadian Government.. It's concern is profits for its investors, contributors, beneficiaries and CEOs. Profits made by FirstLight from us the ratepayers primarily benefit Canadian financial interests. Purchased in 2016 for \$1.2B FirstLight's recent filing reported \$195M revenue in 2019. In 2018 FL registered in Delaware tax shelter, all at the expense of the public good.

6. The state must find better less environmentally destructive avenues for meeting energy storage needs. Reduced energy use by all is one way and is necessary if we are to survive these crisis. The destruction of the river is not a just solution to insatiable desire for energy.

7. FirstLight claims it is a steward of the land. They own properties in some of the most beautiful areas of New England and beyond. The Ct River is a 4 state system that runs through the heart of the Silvio Conte National Park. In accordance with the Public Trust law, they are obligated to maintain open access to the river and mountain for purposes of recreation and enjoyment for all into posterity. FL and our public officials have failed the public trust as they have allowed disruption and destruction of the river ecosystem affecting fishing, farming, and public enjoyment, creating a dead river. They charge fees and require permits to the public for access and use in many cases. We recognize the indigenous people of this area as the true stewards of the land and wholly commit the land back movement

8. PSP /FirstLight is designated as an Environment Social Governance (ESG) corporation by using false claims that they are suppliers of

“clean energy”. As part of this standing they are mandated to engage in community “giving”. FirstLight then uses its economic strength to tout its practices and to garner support in local communities most affected by its operations. In essence using money it takes from the rate payer to then buy their favor

9. Federal, State and local agencies that are charged to protect the river for the public good are instead complicit with FirstLight continuing destruction of the river. The enormous wealth of FirstLight and its greenwashing language have cast a net over our environmental protection agencies as well as the Maura Healey administration including Climate Chief Melissa Hoffer.

10. Firstlight violates a 1973 endangered species act with failure to protect the Short- Nosed Sturgeons delicate spawning area in the 2 mile stretch below TF dam and recently found evidence above the dam too.

11. FirstLight has been operating in violation of the clean water act of 1972. NMPS was completed in 1968 coupled with Yankee Nuclear power but only began operating in 1972.

We ask that the DEP stop the issuance of WQC in an effort to deny FirstLight its ability to continue harming the environment. At the very least, we ask that FirstLight not be allowed to monitor itself. We do not want the fox guarding the chicken coop.

Sincerely,
Mike and Miriam Kurland

Williamsburg, MA 01096

From: [Carol Lewis](#)
To: dep.hydro@mass.gov
Cc: [Comerford, Joanne \(SEN\)](#)
Subject: "FirstLight 401 WQC"
Sent: 2/13/2025 2:00:09 PM

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I strongly oppose there is licensing for FirstLight Power's (First Light) Turners Falls Hydroelectric project (FERC No 1889) and Northfield Pumped Storage Project (FERC No 2485). While these combined projects do provide electricity at peak use hours, they also USE electricity in the process. Their goal is not so much more energy as a way to make money by using energy that is cheaper to produce energy they can charge more for. This provides economic value to the companies, but it does NOT provide clean energy value to the Commonwealth or the nation.

More importantly, the water exiting and returning to the Connecticut River is greatly disruptive to the aquatic life of the river, where there are many important species, some at greater risk than others.

Do NOT resilience this project.
Thank you

--
Carol Lewis
[REDACTED]
Amherst, MA 01002
[REDACTED]

From: [Priscilla Lynch](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 Water Quality Certificate
Sent: 2/24/2025 11:23:06 AM

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Comments on FirstLight's Water Quality Certificate
 Priscilla Lynch
 Conway, Ma. 01341

Without a doubt, the MassDEP should DENY the 401 Water Quality Certificate for FirstLight's operation of the Northfield Mountain Pumped Storage Station. Why a Department of Environmental Protection would consider otherwise is beyond comprehension. Why a Department of Environmental Protection would not adhere to the Clean Water Act is beyond comprehension.

There is no question that NMPS is extremely environmentally destructive and has been so for the past 50+ years. The river is pulled backwards for many miles, all life is lost in the turbines, erosion is severe, the ecosystem is altered, discharge is not tested, native concerns are not respected nor protected. Why is Mass DEP allowing itself to be complicit in this ECOCIDE. Mass DEP is entrusted with the public good and yet is proposing a certificate which will allow this ECOCIDE to continue for 50 more years.

There is nothing good which comes from NMPS. Primarily fossil fuels and nuclear energy pump the water up the mountain. The energy that is produced when the water is released is not clean energy as claimed. There is no gain, in fact there is a net loss. Any potential clean energy is lost in the dirty energy used in pumping the river up. The rate payers pay for both of these efforts. And everyone loses when it comes to the environment.

Much is made of the need for energy storage and NMPS' ability to meet emergency needs. How often, for how long and at what cost does NMPS provide for these emergency needs? A reasonable question for someone wanting to assess if this ECOCIDE is at all defensible. Sorry, the public can't know this information. If it were defensible the information would be published far and wide. FirstLight made \$158m in profits in 2018 and registered itself in Delaware's tax haven in 2019.

Why would Mass DEP choose ECOCIDE and benefit a multinational profit driven entity like FirstLight? Why won't Mass DEP do its job? Protect our environment! DENY the 401 Water Quality Certificate for NMPS.

From: [Ferncliff Studio](#)
To: dep.hydro@mass.gov
Subject: Comments regarding re-licensing First Light Northfield Project
Sent: 2/23/2025 4:54:14 PM

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Hi -

As a Northfield resident and someone who appreciates the Connecticut River and the health of our natural environment, I am concerned that the conditions described in the Draft Water Quality Certificate (WQC) issued by Mass DEP do not go far enough to address the protection of the river and its aquatic life. With FERC standing ready to re-license the Northfield Mountain Pump Storage System, the well-being of 23 miles of the Connecticut River is at stake.

While erosion and aquatic protection are addressed to a degree, it doesn't appear to me that the mechanism of pumped water to the project is being properly addressed. The uphill pumping mechanism is deadly to wildlife, essentially chewing up aquatic creatures as water is pumped up and down the mountain. The effect of this is deadly to the health of the river and has been going on way too long.

I believe there needs to be more public involvement to work out conditions for operation that would be aligned with better stewardship, including an indigenous perspective, to protect the river. The DEP must adhere to the Clean Water Act and protect fish and the natural flow of the river. The DEP should deny the WQC and demand that FERC end the license renewal. Fifty years is too long a time frame. There should be no erosion, oil spills, or silt columns. The health of the river should be better addressed and properly restored.

Sincerely,
Marcy Marchello

From: [thomas tmatsuda.com](mailto:thomas_tmatsuda.com)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 1/30/2025 7:06:46 PM

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I read the WQC draft.

Jo Comerford, Natalie Blais, Daniel Carey, and Mindy Dumb put out a joint public comment.

I endorse their comments and add my support to them.

Respectfully,
Thomas Matsuda
[REDACTED]
Leverett, MA

From: [Becca Matthews](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/4/2025 8:08:52 AM

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We are writing to comment on FirstLight Power's draft water quality certification. The FirstLight facilities cause terrible ecological destruction of the river ecosystem. The enormous daily fluctuations in the water level are devastating for all the aquatic life in the river, including the federally endangered shortnose sturgeon. We hope you reconsider granting this water quality certificate, which includes no protections for the river.

Sincerely,

Rebecca Matthews and Jef Sharp



Amherst, MA 01002

From: [Howard and Lynda Mayo](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/24/2025 1:58:14 PM

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Dear Elizabeth Stefanik,

In response to the Greenfield Recorder, Readers Write, 2/20/2025

I am writing today to express my concern and state the need for Gill Conservation Commission, as well as towns of Erving, Montague and Northfield, and the FRCOG, (Franklin Regional Council of Governments) to be included in the oversight process over the erosion control plan.

There is great need to continue the requirement for input and oversight by FRCOG and the conservation commissions -- although MassDEP has concurrent jurisdiction.

Please help us to see that this is included.

Lynda Hodsdon Mayo
Gill Resident

February 22,2025

Dear Ms Stefanik and Mass DEP,

I'm Maggie (Mary) McManus, a resident homeowner in Greenfield. I lived for 30 years in the lower Hudson Valley. Pete Seeger and other concerned river activists showed us that the public can and must voice their concerns and ultimately can prevail for the greater good of the environment that the rivers effect. Our institutions (mass dep) must advocate to the best of their abilities for the stakeholders and push the corporations standing to make big profits from our resources to do their very best to honor, respect our wishes.

I do not feel FirstLight is making a good enough effort and I do not feel that Mass Dep is asking for enough.

The draft you released that incorporated public concerns did not have enough requirements to prove that FirstLight will hold or improve water quality which is one of the requirements to uphold the state's water quality standards. How can this be?

The aesthetics of the river are not being sufficiently addressed..... what I see often is a barren riverbed, it looks ravaged. When I first started noticing this I wondered what was wrong with the river. Why did it look so unnatural. Now I understand. First Light redirecting flows. No water. How can 500 cfs be enough? 1400 cfs is what river scientist are recommending. The river below the dam needs this for migration, recreation and aesthetics.

Yes hydropower is an important part of our green solution but please, don't be shortsighted. 50 years is a long time. They, FirstLight, seem to be making us grovel for every inch of progress instead of trying in a forthright manner to be good stewards of this wonderful resource along with our concerns.

We, the people, are depending on you to get the best agreement from FirstLight that you can.

On a fiscal note, I wonder why we don't see anything about monies being set aside or discussion of decommissioning of dams as other technologies evolve. Surely FirstLight will have it's hands in that as it evolves. Even the Northfield Mountain pumping facility situation could be more palatable in the short term if they indicated they would plan, research building a dam to create a closed system. Isn't that the problem with the

February 22,2025

pumping station? If it were a closed system there wouldn't be the problem of loss of aquatic life and huge water fluctuation causing erosion on the river banks.

We need financial reassurances that FirstLight will not abandon us as taxpayers when facilities become outmoded and they move on. You have only to look at the abandoned Shopping Malls left behind by corporations and developers when their financial interests shift.

One last thing is that nowhere are Indigenous people mentioned. It feels that their concerns for protection of ancient lands and customs has been entirely sidelined. No mention. Why? They are stakeholders.

I feel privileged to live where water is so abundant. Trees, grand.

Please let's work our best to get the best contract from First Light . Mass Dep has to advocate for the stakeholders in this.

Push as much as you can. Represent us.

My sincere appreciation for the work you do.

Maggie McManus

Greenfield Mass 01301

From: [Carol McNeary](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/24/2025 3:04:34 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

My family has lived close by the Connecticut River for 60 years. Because of that connection I volunteered to be trained in water quality testing and have been involved with river conservancy organizations for many years. After attending two meetings to review the MassDEP comments on the 401 WQC section as part of the First Light relicensing process, I do not believe their plan meets your mission requirement to improve and not further degrade the water quality of the Connecticut River after it passes through the Northfield Pumped Storage Project.

It is not enough to continue the status quo enjoyed by First Light and permit the fluctuation of water levels that impede fish migration and kill thousands upon thousands of fish caught in the process that dumped them into the riverbed below. The draft statement by MassDEP is not sufficiently stringent in preventing further degradation of its own stated measures for meeting state water quality standards regarding aquatic life.

The people of Massachusetts rely upon you as dedicated employees of the agency protecting our environment to safeguard one of our most important natural resources- the mighty Connecticut River. Thank you for your work.

From: dodi <[REDACTED]>
Sent: Tuesday, February 25, 2025 2:19 PM
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC

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Dear Arbiters of Public Trust,

****Please count this I sent an incomplete draft on Friday 2/21/2025 by accident. ****

I am a member of the Connecticut River Defenders and reside in Greenfield, MA. I love the river for the life it brings, in told and untold stories, and abounding mysteries. I wholly support the clean water act and the natural flow and function of a river. Living rivers flow downstream. This alone is enough to deny to the WQC.

P- 2485 Northfield Mountain Pumped Storage Facility is changing the downstream course of a river and killing ALL aquatic life that gets sucked into the bi- directional turbines

P-2485 is in violation of the clean water act of 1972. Northfield Mountain Pumped Storage began operations on the river in 1973, after a fatal accident delayed its start date. It has been unregulated for over 50 years, in contradiction to federal law. The unyielding demand for energy consumption, battery storage coupled with the vast privatization of the grid, and 2050 net 0 goal; is destroying a river while damaging interconnections necessary through life cycles. Not to forget humans are as much a part; we cannot survive

without nature, however nature thrives without human interference. This is not necessarily a condemnation BUT it is a WARNING that we MUST learn to live in accord with nature or greatly reduce our species survival .

FirstLight is killing a River to make profits from dirty greenhouse gases emitted from fossil/nuclear use, adding more hurt to the overwrought environment. By increasing atmospheric toxins FL adds to the growing prevalence of childhood asthma among other respiratory ailments found downstream and globally. Local people, our govt and agencies must stop taking the easy way out. We allow ourselves to be woo'ed by global-corporate oligarchs offering FALSE solutions to our energy transition, while lining their pockets with profits and their souls with misdeeds.

State Agencies and law makers who consider mitigating the relicensing P-2485 owned by FirstLight are in violation of the doctrine of Public Trust. The Trust mandates that what is essential to life - Water, Air, Land-is to be protected and preserved into perpetuity . Like many of you I am a mother now grand mother of 5. I must demand that you exert your full power to promote a viable sustainable earth in which the multitude of grandchildren can thrive. Deny the WQC.

Truly it's about relationship, since colonizers and settlers 400-500 years ago began the commodification of nature to adapt and use for our sole benefit and profit. How we treat nature tends to be reflected in how our treatment of others. This is the ultimate outcome of corporate capitalism - dehumanization, increased reliance on industry and alienation from nature.

Seeking answers for our energy needs from multinational corporations is like the abused returning to the abuser for

help. It's not the way to go. In fact so much of what is being touted as solutions are the opposite of what any sane person should accept. Daily human activity is directly or indirectly at the root of the collision course we are on with mass extinction and climate chaos. With your choice to deny the WQC you will be standing up a new way to cooperate and reciprocate with nature and each other.

Federal, State and local agencies that are charged to protect the river for the public good are instead complicit with FirstLight continuing its destruction of the river. The enormous wealth of FirstLight is alluring; its offer to Massachusetts uses greenwashing language to ultimately cast a net over our environmental protection agencies as well as the Maura Healey administration including Climate Chief Melissa Hoffer and several others. This not the way to net zero 2050.

You MassDEP are in a position to correct so many wrongs, and restore the faith of the commonwealth in your integrity as protectors of our shared natural spaces . Climate Chaos and biodiversity loss are real. We are experiencing it. Climate disruption is heading into our futures. What you do right now is vital. You can stand up to this deadly force on the Connecticut River and Deny the WQC. You are your own last hope of redemption for this river, yourselves, and for our shared human cause. Today and tomorrow and the next I Implore you to stand up for the river, stand up for life, stop choking out life, stand up for future hope

It's time to end corporate false solutions that are motivated to make profits for their investors. We cannot afford the competitive market to drive solutions. Most of the motivation to operate NMPS is the easy dollars it makes for Canadian Pensioners. How can those same people who are positioning

themselves to dominate North East energy production, transmission, and storage respond to local needs, preferences and increased demand for community access and control. I'll just mention here as a resident lover of the river and nature that I was never able to access a customer service representative at FirstLight, and a well paid ISO-NE non- profit chair could not answer public questions about -when are hours of pumping and generating?, how often is NMPS used for energy emergencies? How much are rate payers being billed for NMPS (including forward capacity) ? Was NMPS recently shut down for urgent repairs?; to name a few lingering questions.

Since the dams were built some 400 years ago on the river, they have changed not only the course of the river but the very course of human relationship with the river. For 14,000 years, some area indigenous scholars estimate, that local tribal life was intimately tied to the river. From indigenous teaching we learn about how the respect, gratitude and reciprocity guided their interaction with the river. It's time to recognize and honor the great care indigenous peoples took of the river. DEP must make a priority of our indigenous relatives demand to protect historic and traditional places in our midst and to improve the health of the river fishing habitat. I support the LandBack movement and efforts to listen to and work with area tribes is imperative to river restoration; which is another real priority.

Finally it's time now for us to invest locally and grow locally . We must reengage our communities in municipal solutions and literally take back the power we have so freely given to massive corporate privatization and control. Be who we need you to be
- Surprise us JUST SAY NO!

Dorothea (Dodi) Melnicoff

Greenfield, MA 01301

From: [dodi](#)
To: dep.hydro@mass.gov
Subject: "FirstLight 401 WQC
Sent: 2/21/2025 5:01:04 PM

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Dear Tim Jones

As a Connecticut river defender I support the natural flow and function of a river. Living rivers flow downstream

P- 2485 Northfield Mountain Pumped Storage Facility is changing the downstream course of a river and killing ALL aquatic life that gets sucked into the bi- directional turbines

P-2485 is in violation of the clean water act of 1972. Northfield Mountain Pumped Storage began operations on the river in 1973, after a fatal accident delayed its start date. It has been unregulated for over 50 years. It is destroying delicate and interconnected life cycles of which we humans are as much apart. Without nature we can not survive, without humans nature thrives. This is not necessarily a condemnation BUT it is a WARNING that we MUST learn to live in accord with nature or greatly reduce our species survival .

FirstLight is killing a River to make profits from dirty fossil/nuclear fuel, hurting the overwrought environment with atmospheric toxins and adding to the prevalence of childhood asthma and other respiratory ailments, downstream and globally. We must stop taking the easy way out, allowing ourselves to be woo'ed by global-corporate oligarchs offering FALSE solutions to our energy transition, while lining their pockets.

State Agencies and law makers who negotiate with FirstLight are violating the doctrine of Public Trust which mandates that what is essential to life - Water, Air, Land -is to be protected and preserved into perpetuity . I am a grand mother of 5. I want a viable sustainable earth in which they and the multitude of grandchildren can live.

It's about relationship when we start commodifying nature we tend to treat human relationships in kind. This is the ultimate outcome of capitalism - dehumanization, and alienation from nature .

Seeking answers for our energy needs from multinational corporations is like going to one's abuser for help. It's not the way to go. In fact so much of what is being touted as solutions are the opposite of what any sane person should accept.

Federal, State and local agencies that are charged to protect the river for the public good are instead complicit with FirstLight continuing destruction of the river. The enormous wealth of FirstLight and its greenwashing language have cast a net over our environmental protection agencies as well as the Maura Healey administration including Climate Chief Melissa Hoffer and several others.

You MassDEP are in a position to correct so many wrongs, and restore the faith of the commonwealth in your integrity as our protectors. Climate Chaos and biodiversity loss are real and impact our lives now and into the future, we depend on you our last hope of redemption for this river and our human cause.

Today I Implore you to stand up for the river, stand up for life, stop choking out life, stand up for future hope

It's time to end corporate false solutions that are motivated to make profits for their investors. We cannot afford a competitive market driven solution to answer the problems they have created and promoted since the dams were built on the

river. It's finally time for us to invest locally and grow locally . We must reengage our communities in municipal solutions and literally take back the power we have so freely given to massive corporate privatization and control.

Karl Meyer, M.S.

February 24, 2025

Greenfield MA 01301

Re: FirstLight 401 WQC,

To: Massachusetts DEP Commissioner Bonnie Heiple and Mr. Timothy M. Jones

Dear Ms. Heiple and Mr. Jones,

Enclosed are my formal comments regarding MA Dep's draft 401 Water Quality Certification for FirstLight Power's application to relicense its Northfield Mountain Pumped Storage Station and Turners Falls Project under the FERC. These are FERC Projects P-2485, and P-1889.

As stated, your agency chose not to become a participant in the now 12-plus year-old FERC relicensing process. I, on the other hand, am a recognized intervenor and have served as a member of the Fish and Aquatics Studies Team Member since 2012 for the Northfield Mountain Pumped Storage Station and Turners Falls Hydro Projects, P-2485, and P-1889.

In my participation in your MA DEP Hydro 401 WQ certificate proceedings, you failed to directly address a number of my critical and specifically documented arguments in formulating your draft certificate. My submission included Firstlight's own official FERC licensing exhibits that included federally-sourced data, and historic Federal Power Commission documents largely unavailable to the public that the public should access and knowledge for the purpose of this proceeding.

In light of that, and my FERC intervenor status, please be sure to publish my submission as Written Public Comments(excluding CRC & FRCOG & Karl Meyer attachments), and separately include those as "Attachments to public comment submitted by Karl Meyer" as you did with CRC and FRCOG in the initial published public comment period.

Here are my comments on MA DEP Hydro's draft WQ certificate:

In your draft DEP states its obligation, "to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards at 314 CMR 4.00, and other water quality-related requirements of state law." DEP also agrees acknowledges, "The main objectives of the Federal Clean Water Act are to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet these objectives, MassDEP adopted the Massachusetts Surface Water Quality Standards (SWQS). 314 CMR 4.00, et seq. The SWQS classify each body of water; designate the most sensitive uses to be enhanced, maintained and protected for each class; prescribe minimum water quality criteria required to sustain the designated uses;"

I will restate again, as I first noted in my previous June 3, 2024 WQC comments not addressed in the new DEP draft, Northfield Mountain did not become operational until after Congress

adopted the Clean Water Act: “NMPS, came online in 1973, after the adoption of the federal Clean Water Act of 1972, and thus has never complied with CWA standards, and its minimum of massive flow-stopping pumping for three miles(see Attachment 1 and Attachment 2), its de facto creation of miles of stilled lake, and its fully reversing of those same three miles or more of Connecticut River flow, prevent it from any attainment of the “physical” “integrity of the Nation’s waters” under CWA statutes.

DEP’s draft WQC document also states, “MassDEP’s review of the WQC Application also considered the various peer reviews⁵⁴ of FirstLight’s erosion findings and the BSTEM methodology. These peer reviews discussed limitations of: the BSTEM methodology, the experiment and study design, documentation of the model inputs; and the results and interpretation of the results, all raising questions about the accuracy of the BSTEM results and interpretations.”

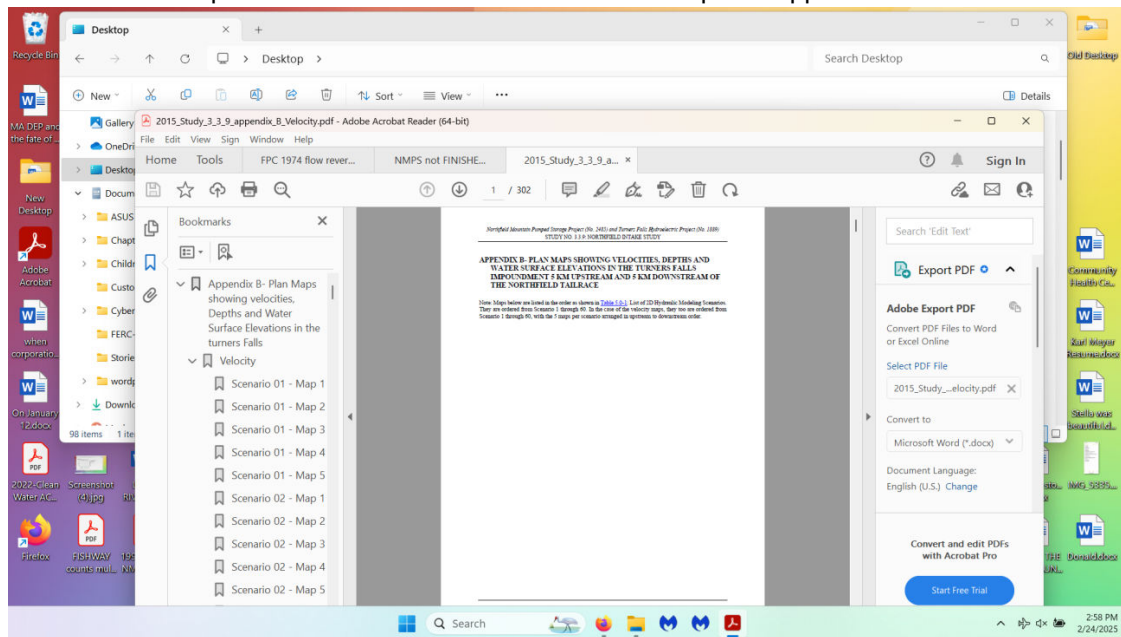
These impacts wholly erase the physical function of a river under MA CMR Surface Water Quality Standards” as well as rivers as accepted under Inland Water Class standards. Under these NMPS-created conditions which occur with general regularity throughout the Connecticut River’s yearly water cycle, they do not meet the CMR DEP definition of “flowing water,” nor do they have an integrity of structural relationship to “harmonic mean flow.” Thus, NPS impacts are fully encumbered and subject to CWA and MA CMR requirements.

See FPC, WMECO, and FirstLight’s FERC application B-stem study documents attached.

The sole acknowledgement the DEP draft makes of a river stopped, deadened and reversed for miles is this admission of a lack of due diligence: “Both the uphill and downhill pumping operations cause unnatural changes in the river surface elevation on riverbanks (7) and flow; some report that the river flows backwards at times during pumping and generating modes.(8*)” A glaring inclusion in your lack of understanding or investigating FirstLight’s FERC document and final license proposal and Fish and Flow agreements—there is no “downhill pumping,” that’s what’s called gravity, where a river flows in its ancient, natural direction, toward the sea.

The attached FirstLight FERC documents--and index, to over 200 maps showing surface water flow direction only capture 5 kilometer snapshots of Northfield Mountain impacts—which are visited on a 20 mile reach impacting 3 New England states, and over half a dozen towns and municipalities. More than half of these maps document reversed flows and the erasure of a living Connecticut River. And, the limited 5 kilometers shown limits any understanding of the full

reach of these impacts. Please be sure to see all model maps for Appendix B



All are stripped of all their unalienable rights to a living river and any natural routed flow in all the hours under which these conditions persist. They have rights to substantial compensation due to the erasure of a natural water body. DEP must address these conditions, documented and included in the FERC final license application. The CWA and MA CMR Surface Water Quality Standards must be met under DEP, to protect the public's statutory rights to a living river must be met to issue a 401 Water Quality Certificate for future NPS operation.

The Connecticut under both federal and state standards is defined as a "river"--not a lake, or more grimly, a lake that flows backward for miles, the eggs, larvae and young and adult resident and migratory fish suctioned, killed and strained to the jaws of an all-killing aquatic machine. It is DEP's duty to address this. As stated regarding the year-round carnage of NMPS in two of prior submitted paragraphs of my June 3, 2024 DEP comments, which I restate here:

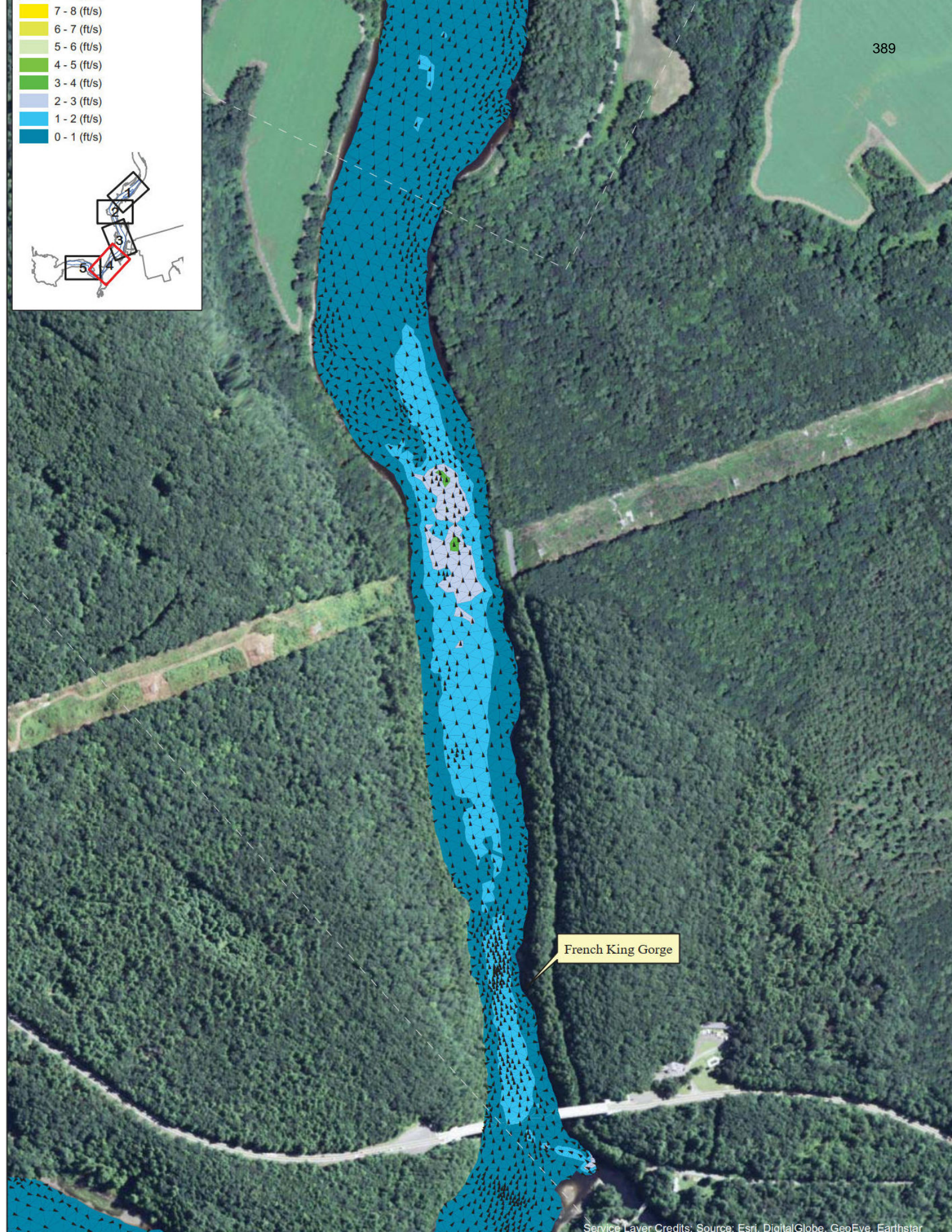
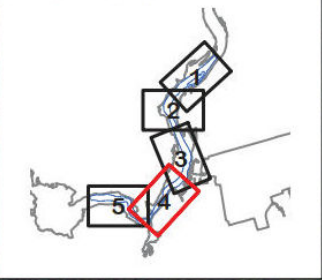
"Its full carnage has yet to be calculated, as over two dozen species are present within this projects direct and indirect sphere of massive pump and release flows. Attachment 4, page 13, documents its impacts on just a single migratory species, American shad, as example. It is biologically accepted that nothing survives a trip through NMPS's turbine cycling."

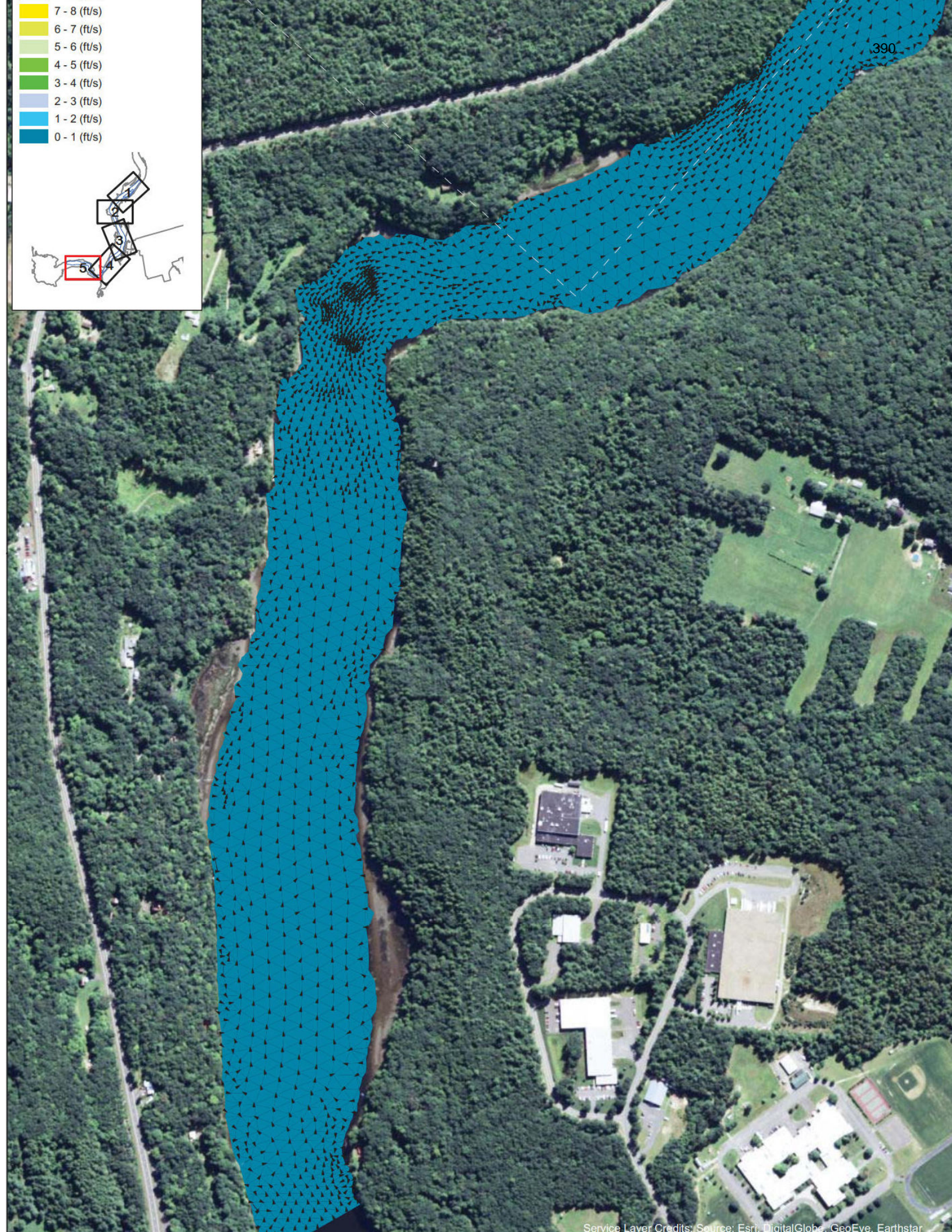
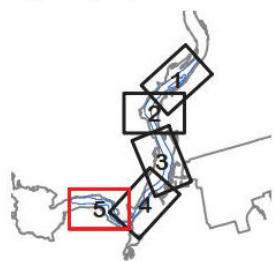
"FirstLight's proposed 3/8 inch entrainment prevention netting will not stop the massive entrainment of unnumbered millions of eggs, larvae and juvenile fish, and has a high likelihood of failure due to increasingly high flood surges, and trees and debris entering from eroding banks. Under biological statutes, NMPS proposals do not meet federal or state standards."

DEP's draft WQ certificate for FirstLight relicensing under FERC fails to protect the Connecticut River and the minimum "physical and biological integrity of the Nation's waters" under the Clean Water Act: the bedrock accepted standard of a natural, gravity-centered, downstream flowing river and "natural routed flows." The project does not currently, and cannot be made, to run in compliance with federal and Massachusetts 401 WQ Certification standards. Thus, as FirstLight's application fails to meet both state and federal standards, MA DEP must deny a 401 Water Quality Certificate for continued operation of the Northfield Mountain Pumped Storage Station.

Please see all attached documents.

Thank you,
Karl Meyer, M.S.
Greenfield MA 01301
FERC Fish and Aquatic Studies Team, 2012 - present





Central files - 1889

FEDERAL POWER COMMISSION
WASHINGTON 20426

1. DOCKETS
2. FILES

PWR-LP
 Project No. 1889 -
 Massachusetts

Mr. Robert E. Barrett, Jr.
 President
 Western Massachusetts Electric Company
 West Springfield, Massachusetts 01089

Jun 22, 1974

Dear Mr. Barrett:

C Commission staff is presently preparing the Draft Environmental Impact Statement for the Turners Falls Project (No. 1889) and requests the following information:

O (1) In the revised Exhibit W of the application (page 43, second paragraph), reference is made to the continuing resident fish study being conducted in Turners Falls Reservoir. Please provide a copy of the results obtained since the last Progress Report. If the study has not been completed, please indicate the date you expect a report to be available.

p (2) In Exhibit W (pages 19, 20, and Figure 5), the conditions expected to produce flow reversals in Turners Falls Reservoir as a result of Northfield operation were set forth. Since the Northfield Mountain Project became operational, which of the conditions described have been observed to produce reverse flows? Based on operational experience, are there any observed or anticipated changes in the patterns, durations, or velocities of the flows described therein?

Y Your early response in providing this information would be appreciated.

Very truly yours,

Secretary

20010120-0656 FERC PDF (Unofficial) 09/10/2014

Document Content(s)

13632043.tif.....1-1

From: [Diane Nassif](#)
To: dep.hydro@mass.gov
Cc: [Comerford, Joanne \(SEN\)](#)
Subject: FirstLight 401 WQC
Sent: 1/29/2025 12:44:11 PM

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Dear Ms. Stefanik,

I am writing to submit electronic comments on the Draft WQC for FirstLight Power's Turners Falls Dam and Northfield Mountain Pumped Storage facilities. I live in Petersham, MA and am deeply concerned about the waterways that support the Connecticut River Valley.

My understanding is that First Light has proposed that the volume of its upper reservoir be enlarged, thereby increasing the already excessive amount of damage that will be made to the river and its environment. I am concerned about the impact on energy conservation, fish and wildlife resources (spawning grounds and habitat), visual resources, cultural resources, recreational opportunities and other aspects of environmental quality.

I would like to join with my State Senator, Jo Comerford, to make the following recommendations:

Heed the requests of Indigenous stakeholders who have stewarded the river and its surrounding land for millennia.

Renew the license for a maximum of 30 years.

Maintain a minimum flow below the Turners Falls Dam of 1400 cfs from July 1 to November 15. This will allow for boating and recreation and protect the habitats of fish and macroinvertebrates. In addition, the local municipalities receiving income due to flows should not be financially penalized due to ecologically sound practices.

Require that FirstLight implement a streambank monitoring plan to measure erosion impacts yearly.

Complete the installation of a fishlift and barrier net within 2 years of relicensing. Monitor the effectiveness of both of these implementations.

Ensure that state and federal agencies retain all the freedom necessary to ensure the protection of river species and health, should it be determined that FirstLight operations harm the ecosystem.

Create a decommissioning fund so that when the FirstLight installation becomes obsolete it can be removed without requiring the local municipalities or state to bear the cost.

Work with other projects on the Connecticut River to mitigate downstream damage during episodes of flooding due to climate change.

Provide realtime publically available data and analysis of flows, the impact on fish, macroinvertebrates, and the ecosystem along the river.

Thank you for your consideration of these vital recommendations for our beloved river and its ecology.

Diane Nassif
Petersham, MA
[REDACTED]

From: [Cynthia Nolan](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/24/2025 10:29:07 AM

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Hello, I am reaching out to you to ask you to deny the Water Quality Certificate to First Light. I live by the Connecticut River and it is so upsetting to me to know about the damage First Light is doing to the river by their unscrupulous actions. The pump station must be shut down before it causes even more damage to the river. We need the river and its ecosystem to be as healthy as possible and this is the moment to make a change for the good for all of us who live and enjoy Mother Nature in Massachusetts.

Please, please shut down the First Light pump station!!

Sincerely,
Cynthia Nolan
Northampton, MA

From: [Kate O'Connor](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/18/2025 8:54:29 PM

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February 16, 2025

Elizabeth Stefanik
 Attn: FirstLight 401WQC, MassDEP-BWR
 100 Cambridge Street, Suite 900
 Boston, MA 02114

Re: Draft 401 Water Quality Certification with Conditions, dated February 24, 2025 (the "WQC"), issued by the Massachusetts Department of Environmental Protection ("MassDEP") to the Applicants named therein (collectively "FirstLight") in connection with relicensing of the Turners Falls Hydroelectric Project (the "Turners Dam") and the Northfield Mountain Pumped Storage Project ("Northfield" and collectively with the Turners Dam, the "Facilities")

Dear Ms. Stefanik:

MassDEP's draft WQC, referenced above, represents a failure by MassDEP to fulfill its statutory responsibilities to the Connecticut River and the people of Massachusetts whose interests MassDEP is supposed to serve. This river should be protected for the public good and as an undamaged habitat for nature. It should not be used for the profit of a private entity that massively harms the public good by destroying the inhabitants of the river and degrading their habitat.

Our system of laws and regulations is designed to ensure that the process of determining whether and on what terms we utilize a natural resource like the Connecticut River to generate power fairly and appropriately balances the various needs of people and the environment. In the context of relicensing the Facilities, MassDEP is tasked with a critical role in this regard. Under the Massachusetts Clean Water Act, MassDEP is responsible for taking "*all action necessary or appropriate*" to secure to the Commonwealth the benefits of the federal Clean Water Act, which is to "*restore and maintain the chemical, physical and biological integrity*" of our waters. The Massachusetts Surface Water Quality Standards (the "SWQS") were adopted to meet these objectives and MassDEP is charged with enforcing these standards through the water quality certificate permitting process (the "Permitting Process") for the benefit of the river, her ecosystem, and all residents of the Commonwealth.

In issuing its draft WQC, MassDEP has ignored the well-supported requests of many Massachusetts residents and groups, including scientists, academic experts, NGOs and concerned citizens, and refused to add conditions to its WQC necessary for the

protection of the Connecticut River and compliance with the Clean Water Act and the SWQS.

In conducting the Permitting Process, MassDEP is also violating other policies and laws. It has refused to consult with the Indigenous collective, The Nolumbeka Project Tribal Coalition (“Nolumbeka Project”), despite requirements to the contrary set forth in the Environmental Justice Strategy issued by the Massachusetts Executive Office of Energy & Environmental Affairs in February of 2024 (the “EJ Justice Strategy”). The department has also refused to add conditions to the WQC that adequately address threats from operation of the Facilities to federally endangered Shortnose Sturgeon as required under the federal Endangered Species Act (“ESA”).

If MassDEP issues the WQC in its current draft form, it will do so in violation of the Public Trust Doctrine.

Conditions Insufficient to Comply with the SWQS and Clean Water Act

Multiple commentators to MassDEP have attested both in writing and verbally to the severe damage caused by operation of the Facilities to the Connecticut River ecosystem and thus the many ways in which these facilities violate the Clean Water Act and the SWQS. We have pleaded with MassDEP to insert conditions in its WQC to mitigate this ongoing damage and address these violations of law, but MassDEP has refused to do so.

Improper Designation of “Most Sensitive Use”.

As one example, MassDEP has designated two endangered plants that have taken up residence in the dewatered area below the Turners Dam, the Tufted Hairgrass and Tradescant’s Aster, as the “the most sensitive use” of this portion of the river. The department states that the existence of these plants is the reason that it cannot require FirstLight to increase minimum flows over the dam above the paltry 500 cfs minimum flow from July 1 – November 15, a flow which is not even enough to fill the riverbank. MassDEP’s designation of these plants as the “most sensitive use” of the river is nonsensical. Surely the Tufted Hairgrass and Tradescant’s Aster are not naturally occurring in the middle of a healthy, flowing riverbed? Why does MassDEP consider these terrestrial plants the most sensitive use of the river and not the federally endangered Shortnose Sturgeon, fish who can only survive in a river with deep channels, who have lived in this area of the river for thousands of years and are struggling to survive there still?

As has been well-documented to MassDEP, two strandings of Sturgeon occurred just this past summer in rockpools below the Turners Dam – stranded by FirstLight’s failure to release sufficient water over the dam to support their habitat. *FirstLight’s own Draft Biological Assessment for Shortnose Sturgeon* shows that a Weighted Usable Area for Sturgeon living below the Turners Dam occurs with flows of around 2,000 cfs, far above the 500 cfs that would be allowed under the draft WQC. ^[1]

MassDEP is mandated by its own SWQS and by the ESA to protect the endangered Shortnose Sturgeon and must add a condition to its WQC increasing minimum flows to support these animals. ***Sturgeon, not plants, are the “most sensitive use” of the area of the Connecticut River below the Turners Dam.***

- No Conditions to Protect the River from Increased Northfield Pumping Operations.

As another example, MassDEP has dismissed concerns about the impact of a license provision that would allow FirstLight to significantly increase use of Northfield's upper reservoir storage capacity. Use of this increased storage capacity would enable FirstLight to increase Northfield's pumping operations by up to 25%, resulting in continuous 24-hour cycles of pumping the river levels up and down, without rest.

It is well-documented that Northfield causes severe damage to the Connecticut river. Its pumping operations kill millions of fish and other aquatic organisms sucked up into its intake pipe each year, erode riverbanks, confuse migrating fish, harm shoreline species and can make the river run backward for miles. Allowing FirstLight to significantly increase Northfield's pumping operations would substantially increase the devastation that Northfield already causes to the river. To make matters worse, the new climate law passed by the Massachusetts legislature at the end of last year requires Massachusetts to sign long-term contracts to procure energy storage and specifically states that existing storage facilities qualify for these contracts. If FirstLight is awarded a long-term energy storage contract, it will be financially incentivized to make full use of the additional storage capacity of Northfield's upper reservoir and the river will suffer horribly as a result.

Yet incredibly, MassDEP does not even consider the negative impacts of the permitted increase in use of Northfield's storage capacity in issuing its draft WQC, concluding without any supporting evidence that allowing FirstLight to utilize this increased capacity –

“will have no significant impact on water quality, fish, plants, wildlife, endangered species, and erosion”.

Illegal Thermal Discharge

As a third example, Gerry Szal, a former MassDEP aquatic biologist, has documented that Northfield discharges significant quantities of heated water into the Connecticut River at times, causing river temperatures in the impoundment to significantly increase. Heat is a pollutant under the Clean Water Act and FirstLight has no permit to discharge this pollutant into the river. Yet even though Mr. Szal has presented his findings to MassDEP, *the draft WQC is silent about FirstLight's illegal discharge of heated water into the river.*

The above examples are three of many concerns raised by commentators to MassDEP that MassDEP has chosen to ignore. ***Any WQC issued by MassDEP for the Facilities must add conditions to address the above concerns and all other concerns raised by commentators including those raised by Western Mass Rights of Nature, et al., in its May 31, 2024, and December 11, 2024, letters to MassDEP.***

Failure to Consult with Nolumbeka Project

- Many Massachusetts residents attended the public information session held by MassDEP at the Shea Theater in Turners Falls on October 10, 2024. We were shown a powerpoint presentation that included a slide purporting to outline “What MassDEP Cannot Consider – Outside its Jurisdiction”. One item listed as beyond MassDEP's

purview in the Permitting Process was “Tribal historic and cultural interests that are not regulated under state water quality laws.” A MassDEP official confirmed at the meeting that no consideration of Indigenous concerns would be part of the Permitting Process.

MassDEP’s failure to consult with Nolumbeka Project and consider and act on their concerns violates the terms of the EJ Justice Strategy. On page 99, the strategy states that MassDEP has developed internal guidance for permit proceedings, including 401 water quality certifications, which require advance outreach to environmental justice populations to address their needs and concerns. The EJ Justice Strategy goes on to state that –

“permits should include, when appropriate, specific mitigation requirements that are tailored to the needs and requests of the potentially impacted EJ population.”

Nolumbeka Project has been a stakeholder in the relicensing of the Facilities since the proceedings began and is also an intervenor in these proceedings. They have pleaded over the years for better protection for the Connecticut River and the aquatic life she supports, as well as for protection of Traditional Cultural Properties located in the dewatered reaches below Turners Dam. Yet the concerns of Nolumbeka Project have been ignored by MassDEP in the Permitting Process.

MassDEP must not issue a WQC for the Facilities without consulting with Nolumbeka Project and properly addressing their concerns, as outlined in their letter to MassDEP, dated December 17, 2024.

Conditions Insufficient to Comply with ESA

Despite entreaties by multiple commentators, MassDEP has refused to add conditions to the WQC that adequately address harm caused by operation of both Facilities to federally endangered Shortnose Sturgeon, including those discussed above. As we noted in our December 11th letter, *MassDEP must itself comply with the terms of the ESA* in its issuance of any WQC for the Facilities. Courts have held that a governmental third party such as MassDEP pursuant to whose authority an actor directly exacts a taking of an endangered species may be deemed to have violated the provisions of the ESA.^[2]

Unless and until MassDEP has added conditions to its WQC that are guaranteed to protect the endangered Shortnose Sturgeon, a WQC for the Facilities must be denied.

Violation of Public Trust Doctrine

The Public Trust Doctrine is a common law right that predates the birth of England. This doctrine provides that certain natural resources like the Connecticut River are the common property of all citizens and must be preserved and protected by the government both as a public natural asset and to prevent eco-centric harm. The state's power to alienate public property has traditionally been constrained by the requirement that such transfers result in a benefit to the public. When public trust

property is involved, the benefit to the public must be far greater and more clearly demonstrated. Today, public trust property like the Connecticut River is under siege from pollution, climate change, biodiversity loss and other causes. MassDEP's issuance of the WQC as drafted to FirstLight, a private company, under these circumstances, thereby greenlighting destruction of the Connecticut River ecosystem for another 50 years, does not pass muster.

For all the reasons stated above, MassDEP's issuance of the WQC to FirstLight as drafted would violate the Public Trust Doctrine.

We submit this letter as our public comments on MassDEP's draft WQC and reserve all rights.

Sincerely,

Kathleen O'Connor and Frederick Spence

██████████

Westhampton, MA 01027

[1] Figure 7.2.2.2-1 of the Shortnose Sturgeon Draft Biological Assessment shows the habitat vs flow relationship for adult sturgeon in Reach 1 below the Turners Dam, where a maximum Weighted Usable Area occurs around 2,000 cfs.

[2] Strahan v. Coxe, 127 F3d 155 (1st Cir 1997).

From: [Tribal Scribal](#)
To: dep.hydro@mass.gov
Subject: Re.: "FirstLight 401 WQC"
Sent: 1/29/2025 12:57:14 PM

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To put it quite simply:

[#SaveCtRiverFromFirstLight](#)

Don Ogden

[REDACTED]

Florence, MA 01062

"Our planet's future climate is inextricably tied to the future of its forests." - Oct. 5, 2018 letter from 40 scientists to the Intergovernmental Panel on Climate Change

"Change is the law of life. And those who look only to the past or present are certain to miss the future." – John F. Kennedy

More writing here:

<http://concertobi.blogspot.com/>

<https://devolutiondays.blogspot.com/>

Checkout The Enviro Show podcasting anytime at:

<https://rss.com/podcasts/enviroshow/>

Broadcasting on WXOJ-LP, 103.3fm. Northampton, MA, Tuesdays, 6pm

Webstreaming at: <http://valleyfreeradio.org/listen/>

Also on WMCB, Greenfield; 107.9, Mondays & Tuesdays at 6pm. Streaming at

<http://wmcb.net/Listen.html>

[Blog w/links and YOUR comments at: <http://envirosho.blogspot.com/>]

Email: enviroshow@valleyfreeradio.org

From: [Enviro Show](#)
To: dep.hydro@mass.gov
Cc: [Priscilla Lynch](#); [Gary Seldon](#);
Subject: FirstLight 401 WQC testimony
Sent: 2/21/2025 7:04:38 AM

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Last October during the previous FirstLight Water Quality Certification Application hearing it was brought to our attention that the DEP has never sampled the water quality coming from the outfall of the Northfield Mtn. Reservoir. It is a known fact that such water contains the rotting remains of aquatic life ground up by the turbines when the water was drawn for the river. In previous years the turbines were shut down so that residue of dead fish and other river life that had not been flushed out in the outfall water could be removed from the system including the reservoir.

In other words, polluted water is being flushed into the CT River and it is not being tested for potential pathogens or toxins. How on Earth can our DEP grant a water quality permit under these conditions? Where is the oversight? What do our state representatives & senators have to say on this matter? It's a scandal, a dereliction of duty. The DEP must deny the certificate.

Don Ogden
The Enviro Show
WXOJ/WMCB/WMNB
140 Pine Street
Florence, MA 01062

From: [Patty O'Neill](mailto:patty.o'neill@dep.state.ma.us)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/24/2025 4:45:51 PM

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We are a group of people living in the Connecticut River watershed. Some of us were born along the banks of the river, others arrived here later, but all of us reside in and with the ecosystems this river creates and sustains.

It is our proximate desire to have the WQC denied and for the DEP to request FERC to end the annual license extension. Ultimately, we wish to see the entire ecocidal monstrosity that FirstLight operates and profits from be decommissioned and that the river be allowed to flow freely, to reach levels where it can once again meander through wetlands, directed by beavers, and made resilient once more to face a changing climate. Wetlands will be crucial reservoirs of life during the coming droughts, and letting the river flow freely will support them.

The Northfield Mountain Pump Storage facility reverses the flow of the largest, most ecologically important river in the entire region by forcing billions of gallons of water through turbines that kill all macroscopic life. Worse, the energy used to facilitate this ecocidal process is predominantly fossil fuel in origin. The water, after warming in the sun, is then released to generate a mere portion of the original energy used. This release is not timed so as to provide an emergency backstop for an otherwise collapsing grid, despite the claims of its operators. It is released when it is profitable for FirstLight, wholly owned by a Canadian Crown corporation. Only in a world that renders a living ecosystem into an inert "conveyor belt" (to use the DEP's own language from the draft WQC) could a Canadian Crown corporation be considered a legitimate "stakeholder" in this matter, but since that is the world that we live in, we find it necessary to call into question the operating principles and motives of this corporation. They exist to make money, they do not exist to bolster the energy security of Massachusetts nor the ecological health of the Connecticut River watershed.

And the "thing" they make money off of is a living, dynamic ecosystem. An ecosystem that FirstLight does literally nothing to support. There is no reciprocity in their relationship with the river, a river that sustains us and is the foundation of life here. They "provide" tax revenues to a handful of municipalities, but those revenues merely represent a fraction of what FirstLight takes from this river. To return a portion of something that was taken is neither generous nor reciprocal. This is naked extractivism, and there is absolutely nothing environmentally sound about it. Any attempt to cast it as such, including by the governor herself, is little more than greenwashing. You are the Department of Environmental Protection. Act like it. Deny the water quality certificate and request FERC to end the annual license extension.

The grounds upon which to deny the WQC are numerous. The portions of the Connecticut River both above and below Turners Falls Dam (TFD) are currently listed as impaired (not meeting state water quality standards) for various reasons, including dewatering, flow regime modification, and streamside alteration—impairments that are attributable in whole or in part to the operations of the FirstLight Projects. Mass DEP's 401 draft does not meet its burden for showing how these portions of the river will move from "impaired" status to "attainment" status under the proposed renewed FERC license, nor does it adequately put the monitoring power in the hands of affected communities and organizations whose primary motivations are assuring the health of the river and the wider regional ecosystem, rather than making a profit from it.

The Turners Falls Impoundment (TFI) experiences significant fluctuations in river height due to the Northfield Mountain Pumped Storage facility ("NMPS"), leading to severe shoreline erosion. This 20-mile stretch of the Connecticut River, serving as the lower reservoir for the storage facility, suffers from erosion exacerbated by the facility's operations, which vary the water level by up to five feet. Historical data and studies, including reports by the Army Corps hired expert, Dr. Evan Detheir, confirm that the pumping activities are a significant cause of the erosion. The 401 Draft Special Condition # 10 requires FirstLight to keep the river height between 178.5 and 185 ft. However, the Condition also includes discretionary events when FL is allowed to operate between 178.5-177.5 ft a shocking 30 times per year. Dropping to 177.5 is dangerous for boaters at Barton's Cove and also does not meet the designated use of the waters for recreation.

For the mile-stretch of river below TFD to Station 1, the proposed minimum flows of 500 cubic feet per second ("cfs") from July 1 – Nov. 15 each year are inadequate to protect and maintain Aquatic Life Uses (ALUs), most notably impacting state and federally listed Shortnose Sturgeon, as well as sensitive macroinvertebrate populations. 500 cfs will allow for only 10% of maximum available habitat for macroinvertebrates, among other indicators of not supporting this use. A minimum flow of at least 1,400 cfs from July 1 through Nov. 15 is needed to protect ALUs as well as recreation, which is currently impaired in that section of the river.

Rather than base its proposed minimum flows on protecting the most sensitive ALUs, MassDEP is basing its proposed minimum flows on two non-aquatic, rare plant species that would not exist in the mile stretch below TFD except for the years of impairment due to dewatering. Additionally, DEP did not include any scientific evidence or classification tool for how these plants are considered aquatic. Further, DEP fails to include any information about whether the plants can be transplanted to another location or if that option has even been evaluated. DEP and other state agencies, such as the Natural Heritage Endangered Species Program (NHESP), must make more information available to allow the public to make informed comments about the plants and for DEP to adequately consider their relevance, if any, to FirstLight's 401 Application.

The new eDNA data released in August 2024 that shortnose sturgeon are present above Turners Falls Dam must be taken into consideration for the 401 WQC. This federally endangered fish must be protected and the new found research is timely as the 401 draft has yet to be published. This crucial piece of information must not be left unattended to. One example is for the Barrier Net - no scientific studies of the efficacy of the Barrier Net for sturgeon have been completed.

Further absent are any provisions mandating decommissioning plans and financial assurances from FirstLight for when the facilities are ready for retirement and removal, which should be soon. This measure is crucial to prevent further water quality degradation and ensure that Massachusetts taxpayers do not bear the financial burden of decommissioning. Given the inevitable end of these projects' useful lives as energy producers and reserves, we wish to stress the importance of ensuring that funds for decommissioning are readily available.

Licensing, if at all, should be a maximum of 15 years. According to the Fourth National Climate Assessment put out by the U.S. Global Change Research Program ([https://urldefense.com/v3/https://nca2018.globalchange.gov/chapter/18/!CPANwP4y!VS4kJoNbQskN7tUCzZSZuzOE_c197WxXNnATyJzTPxIQjXnSYnQvDE9LYfjAx4n2MDIXMAFTYyzd9n_BHCmou_Ti0Fn\\$](https://urldefense.com/v3/https://nca2018.globalchange.gov/chapter/18/!CPANwP4y!VS4kJoNbQskN7tUCzZSZuzOE_c197WxXNnATyJzTPxIQjXnSYnQvDE9LYfjAx4n2MDIXMAFTYyzd9n_BHCmou_Ti0Fn$)) , the Northeast is projected to be more than 3.6 degrees F warmer on average than pre-industrial times by 2035, as the Northeastern US is warming faster than any other region in the lower 48 states. This rise in average temperature negatively affects aquatic life by raising the temperature of the river, increasing mortality throughout the seasons, and especially during heat waves. The rising river temperature is further compounded in shallower waters, which is necessarily tied to

the periodic pumping of the Northfield Mountain Pump Storage facility, as well as is the case below the Turners Falls Dam. It would be egregiously irresponsible to re-license these operations for the proposed 50 year period, as this entirely negates the reality that we will be experiencing drastic changes in our regional climate early on in this timeframe. Operations that demonstrably negatively affect the health of the river ecosystem that our entire valley is built around should not be given carte blanche permitting for "business as usual" operation for a full 5 decades into the future against the backdrop of changes we already anticipate, and know will be exacerbated by their usual operations. If any re-licensing is at all considered, a maximum of 15 years should be licensed, allowing the State to be nimbly adaptable to the changing circumstances we are up against, for not just the health of the river, but the health and resilience of the entire region.

We appreciate your time in reading this. Ultimately, as the Department of Environmental Protection, we are merely asking you to live up to your name. The health of our communities, our bioregion, and resilience into the future are what is at stake. Thank you.

Signed,

Patricia O'Neill
Greenfield, Massachusetts

From: [Terry Plotkin](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/14/2025 10:27:24 AM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

What would Mass. DEP say if someone came forward today and said they wanted to take New England's Great River, The Connecticut River, and pull lots of water out of it, pump it uphill using fossil fuels, kill every fish that passed by, all the while eroding the banks of the river and altering the ecosystem? And then to term such a process as clean energy! Such a request would not be considered. Not for a minute. It is preposterous. So why give such a plan a 50 year relicense? This is beyond common sense and science.

If you cannot bring yourself to deny this license then you should, at the very least, shut it down until the netting is up. No more fish should be killed from this awful process. And the erosion of the river must be greatly reduced, much more so than is in the current proposal.

I very much hope that you will do your job well. Terry Plotkin of Greenfield Massachusetts and a user of the living river.

From: [Harriet Pollatsek](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401WQC
Sent: 2/21/2025 10:59:45 AM

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For more than 50 years I have lived in Amherst and appreciated the Connecticut River and its ecology, on shore and off.

I write (again) to urge tighter control of river depth at Turner's Falls to reduce impact on species that live there (especially migrating fish) and humans who enjoy using it for recreation. The timetable to improve fish passage should be speeded up- within at most 5 years, not 10.

Thank you very much for considering my comments,
Harriet Pollatsek

--

Harriet Pollatsek
Professor Emerita of Mathematics
Mount Holyoke College

From: [Norma Roche](#)
To: dep.hydro@mass.gov
Cc: Jo.Comerford@masenate.gov
Subject: FirstLight 401 WQC
Sent: 1/31/2025 9:02:51 AM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

I would like to endorse the public comment by my state senator, Jo Comerford, and her Western Massachusetts colleagues, sent to FERC on May 1, 2024, regarding the draft Water Quality Certification (WQC) decision for FirstLight Power's Turners Falls Dam and Northfield Mountain pumped storage facility on the Connecticut River, particularly their recommendations for accelerating and strengthening the requirements for fish passage and for increasing downstream flows through the summer and fall.

I'm an avid whitewater kayaker and would, of course, be delighted to see increased paddleable flows below the Turners Falls dam. But the fish are a much more important consideration--they have been using and depending on the river much longer than I have. I'm so sad to be reading news stories about the low numbers of adult fish that are passing the dam in spring and about young fish killed by being sucked into the Northfield Mountain intake or left high and dry by low flows in summer. Just as the anadromous fish passing over the Great Falls were a resource for the indigenous people who had a seasonal fishing camp there, they can be a resource for us today, particularly for economically disadvantaged people who can't afford fish in the supermarket, if we act now to mitigate the negative effects of the dam and impoundment and allow their populations to increase.

I urge you to consider and implement the changes to the plan put forward by Senator Comerford and her colleagues.

Thanks very much,

--

Norma Sims Roche
 [REDACTED]
 Northampton, MA 01060
 [REDACTED]
 [REDACTED]

From: [Mimi Sauer](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401WQC
Sent: 2/23/2025 4:40:49 PM

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My life is bracketed by important rivers: I was born along the Mohawk and in my 92nd year, I find myself living along the Connecticut River. Many others run through my life; their role in the living world has been particularly important to me as a student of and teacher of biology.

The damming of the Connecticut at Turner's Falls has many effects on the life in the river. It is therefore imperative that the Massachusetts DEP require FirstLight to monitor those effects for the lifetime of that project's license. For example, good data are needed on the invasive plants (water milfoil, water chesnut and others) in the warm water upstream from the dam. These data need to be collected on a regular basis for the entire period of the license to make certain that these plants do not spread uncontrollably, further degrading the water quality and hence causing more harm to the life forms in the River.

The opportunity for us as concerned citizens to comment on these projects is greatly appreciated and I thank you for your attention to my comments.

Sincerely,
Marlene Sauer
Amherst, MA

From: [Gary Seldon](#)
To: [DEP Hydro \(DEP\)](#)
Cc: [Stefanik, Elizabeth A \(DEP\)](#); [zzzJones, Timothy \(DEP\)](#); [Hilgeman, David \(DEP\)](#); [Leddick, Jesse \(FWE\)](#); [Slater, Caleb \(FWE\)](#); [Jahnige, Paul L \(EEA\)](#);
Subject: FirstLight 401 WQC
Attachments: [DEP DRAFT WQC 1-24-25vDEP COMMENT SUBMISSION.pdf](#)
Sent: 2/24/2025 3:38:37 PM

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To:

Elizabeth Stefanik
 Attn.: FirstLight 401 WQC, MassDEP-BWR
 100 Cambridge Street, Suite 900
 Boston, MA 02114
 Tim Jones, Acting Director of Division of Wetlands & Waterways, MassDEP
 David Hilgeman, Senior Environmental Engineer, MassDEP Wetlands Program
 Jesse Leddick, Asst. Director of Natural Heritage and Endangered Species Program, MA Division of Fisheries & Wildlife
 Caleb Slater, Chief of Hatcheries, MA Division of Fisheries & Wildlife
 Paul Jahnige, Office of Outdoor Recreation (formally DCR)

Greetings,

This is a moral appeal.
 Followed by highlights of the attached detailed comments.

I understand that you each have a part in the deliberations leading to our state's FirstLight 401 WQC determination. I raise a moral dilemma that I had long been unaware of, hence tacitly I've been in the wrong for decades. The moral imperative is to stop killing fish and running the River backwards for electricity and profit. The problem is found at the four house sized turbines:

- sucking the River backward for miles at times, when filing up
- pushing the River backward for miles at times, when releasing down
- grinding up virtually all aquatic life in the water, up and down

I appeal to each of you to apply your clearest hearts and minds, find the laws and interpretations to support the morally needed decision to *DENY* the WQC, particularly for Northfield Mountain Pumped Storage (NMPS.)
 With a tip of the hat to Spike Lee, I plead with you to please, do the right thing.

In 2018 FERC ordered automatic license renewals "... until a new license is issued, ***unless the Commission orders otherwise.***" (my added emphasis) {see p.3} FERC has valid authority to end automatic license renewals. That action, along with denying NMPS a WQC could quickly turn us away from the morally bankrupt ways we've become accustomed to. The decades of Connecticut River desecration could end. They must end.
 Please look at a small child, look to find more strength than imaginable, use that strength to push FERC end automatic relicensing. NOW!

Short of these actions, I respectfully ask you to please pay close attention to my suggested changes and comments. They are an effort to make the Draft WQC 'less worse.' They are shown in the attached pdf. Here a few highlights without digging into the pdf:

- I urge Mass DEP, and all of us, to step boldly out of the 'Indian boarding school' flow of history. We've had way too much of that already! I've heard and read arguments pro and con regarding inclusion of the indigenous voices represented by The Tribal Coalition/Nolumbeka Project. I have seen enough to know that laws and interpretations change, and can help to change history. *Find interpretations of laws to bring Tribal Coalition voices forward in the WQC.*
- While Rivers do move things from their headwaters downstream mostly, they are not **"like giant conveyor belts."** (my added emphasis) {see p.15} *Rivers are more like giant living beings.* Rivers are public trusts, they are dynamic ecological systems, always changing shape and always moving things from their headwaters downstream (excepting dams delaying movement and pumped storage reversing flows.) As part of this dynamic ecological system and pursuant to the Federal Clean Water Act and the Surface Water Quality Standards (SWQS), the quality of water in rivers must be sufficient to support their designated and existing uses. 314 CMR 4.04.
- *New England's great river is a public trust*, say so clearly in the WQC. Use the public trust law to require FirstLight to provide and pay for all protections our River needs. FirstLight profits must not be a factor when balancing between harms to the River and benefit to the public.

- Which SWQS standard is used? “The applicant for a WQC is responsible for providing MassDEP sufficient information **to demonstrate compliance with the SWQS** and other appropriate requirements of state law.” (my added emphasis) {see p.6} Or is it the other standard used multiple times, for example: “MassDEP does not believe it is necessary to comply with the SWQS ... the **provision is not inconsistent with meeting the SWQS**” (my added emphasis) {see p.69} Please use the first SWQS standard consistently. Always COMPLY with the SWQS in this Certificate! And with a tip of the hat to Johnnie Cochran: If FirstLight fails to comply, DEP must DENY!
- I encourage MassDEP to stand up to FERC. Because the Clean Water Act’s 401 process requires the WQC to be part of any License FERC grants, don’t write a need for FERC’s approval into the WQ. For example: “The Commission **may not change the Plan.**” (my added emphasis) {see p.62}
- I’ve suggested changes to take decision making power away from FirstLight. Wouldn’t it be great for, say the Gill Conservation Commission have to sign off on erosion monitoring plans? The people, through DEP with this Certificate, need assurance that *the process of determining terms for use of the public trust resource are not dominated by a well heeled licensee.*
- I’ve suggested changes to close loopholes, tighten timelines to protect the River faster, to specify things for clarity and to have less wiggle room.
- The Draft WQC requires that FirstLight put up a website with real time information, good. I suggest adding NMPS water intake and output flow rates, and water quality testing results focused to discover “whether the ground up fish NMPS pushes into the River is or is not an effluent release that is in compliance with SWQS.” {see p.62 - 63} Make it all public, public access to all the information.

The attached pdf is a made from the Draft WQC that MassDEP posted. (Sorry about the messed up formatting. I’ve referred to the page numbering shown in the text of the pdf, not the pdf numbered pages. If a different digital format is desired, I can provide it in ‘Pages’ or ‘Word’ formats)

Thanks for your consideration, sincerely, Gary Seldon

Gary Seldon

Greenfield, MA 01301

DRAFT-1-24-25

Water Quality Certification with Conditions**FirstLight Hydroelectric Project****FERC License Nos. 1889 (Turners Falls)****2485 (Northfield Mountain)****Applicants: FirstLight MA Hydro, LLC****Northfield Mountain, LLC****Table of Contents**

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1. Seldon Gary

February 22, 2025 at 4:01:26 PM
Montague is the municipality

2. Seldon Gary

February 22, 2025 at 4:05:43 PM
Only stating "until a new license is issued" makes the sentence inaccurate. Please check the record.

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I. Introduction

A. MassDEP's Authority

The Massachusetts Clean Waters Act (State Act), M.G.L. c.21, §§ 26-53, delegates to the Massachusetts Department of Environmental Protection (MassDEP) the responsibility for protecting public health and enhancing the quality and value of water resources within the Commonwealth. Section 27 of the State Act directs MassDEP to take all action necessary or appropriate to secure to the Commonwealth the benefits of 33 U.S.C. 1251, *et seq.*, (the Federal Clean Water Act). The main objectives of the Federal Clean Water Act are to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet these objectives, MassDEP adopted the Massachusetts Surface Water Quality Standards (SWQS). 314 CMR 4.00, *et seq.* The SWQS classify each body of water; designate the most sensitive uses to be enhanced, maintained and protected for each class; prescribe minimum water quality criteria required to sustain the designated uses; and contain regulations necessary to protect and maintain the existing and designated uses and maintain existing water quality including, where appropriate, the prohibition of discharges into waters of the Commonwealth.

B. FirstLight's Water Quality Certification Application

FirstLight MA Hydro LLC (FirstLight) is the owner and operator of the Turners Falls Hydroelectric Project (Turners Falls Project, Federal Energy Regulatory Commission (FERC) No. 1889). Northfield Mountain LLC is the owner and operator of the Northfield Mountain Pumped Storage Project (Northfield Mountain Project, FERC No. 2485). The Turners Falls and Northfield Mountain projects are collectively referred to herein as the Project or Projects. FirstLight Hydro LLC and Northfield Mountain LLC are collectively referred to herein as FirstLight or Licensee. The Projects are located within the municipalities of ~~Turners Falls, Montague~~, and Northfield, Massachusetts, on the Connecticut River.

- 1 FirstLight has applied to the Federal Energy Regulatory Commission (FERC or Commission) for new licenses under the Federal Power Act, 16 U.S.C. §§ 791-825r, after the prior licenses expired by their terms on April 30, 2018. ~~Since then, FERC has issued annual licenses for the Projects under the terms and conditions of the current license until a new license is issued.~~
- 2 On May 9, 2018 FERC issued a NOTICE OF AUTHORIZATION FOR CONTINUED PROJECT OPERATION (FERC Accession #: 20180509-3013) which provides annual licenses for the Projects under the terms and conditions of the current license, which is renewed automatically without further order or notice by the Commission, until a new license is issued, unless the Commission orders otherwise.

On February 22, 2024, FERC issued its Ready for Environmental Analysis (REA) notice. MassDEP held a pre-meeting with FirstLight on March 26, 2024 and established a webpage to help keep the public informed: [401 WQC for the FirstLight Hydroelectric Re-Licensing Project | Mass.gov](#). On April 22, 2024, FirstLight filed with MassDEP its 401 Water Quality Certification Application (WQC Application). FirstLight filed a single WQC Application for both Projects (with separate BRP WW28 application forms). MassDEP has until April 22, 2025, to grant, deny, or waive the certification. On April 29, 2024, FirstLight published notice of two public hearings and a written comment period on the WQC Application in several local and regional newspapers and by other means, including requesting local municipalities to publish the notice on their websites. MassDEP established a written public comment period from April 29, 2024 until June 3, 2024 and held two virtual public hearings on

May 29, 2024. MassDEP satisfied all public notice procedures established pursuant to Federal Clean Water Act section 401(a)(1). MassDEP has considered all public comments for this WQC.

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C. The Connecticut River

The Connecticut River is the longest river in New England. It originates 2,625 feet above sea level in the Fourth Connecticut Lake, Pittsborough, NH, and accumulates water from several major tributaries as it flows south at a slope of about 6 feet per mile. The waterway serves as the boundary between New Hampshire and Vermont, then runs through Massachusetts and Connecticut. It empties into Long Island Sound, over 400 miles from its source.

The Connecticut River watershed is of major importance to the Northeast region. It provides essential habitats and a migratory corridor for numerous species of fish, wildlife, and native plants; recreational opportunities to over 2 million people; and a major source of water for irrigation, power production, industrial water supply and waste assimilation. The river supports twelve diadromous fish species including species listed under the Federal Endangered Species Act (ESA) (five Distinct Population Segments of Atlantic Sturgeon and Shortnose Sturgeon).¹ Each of these species serves unique and important ecological functions by connecting the marine environment to freshwater and terrestrial ecosystems. Industrial development, dams, and overfishing have heavily affected these species over the past 250 years, leading to historical declines in their stocks.²

Unfortunately, these uses are often in competition with one another. The environment of the 11,250 square-mile drainage basin is variable, exemplifying both highly developed, urbanized areas and rural forested reaches. For most of the mainstem and many of its tributaries, the natural stream gradient is interrupted by artificial impoundments that provide over 3 million acre-feet of storage capacity. These reservoirs are a direct result of the more than 1,000 dams located on the mainstem and tributaries. There are 16 dams, most of which are utility owned, impounding nearly 200 miles of the mainstem river. Additionally, the Connecticut River was a natural highway for commerce in New England prior to the development of the railroad. Several canals were built between 1791 and 1828 to facilitate transportation around natural falls. The combined operation of electrical generating facilities and maintenance of the canal systems has greatly influenced the flow regime, water quality, aquatic habitat, and movement of anadromous, catadromous, and riverine fish in the Connecticut River.

The Turners Falls Project is the second dam on the river proceeding upstream from the sea. The first dam is the Holyoke Hydroelectric Project (FERC No. 2004). There are nine dams on the Connecticut River upstream of Turners Falls, all FERC-licensed hydroelectric projects. Turners Falls has an authorized installed capacity of 64.21 megawatts (MW) and generates approximately 332,351 megawatt-hours (MWh) annually.

For many years, the state and federal governments have cooperated in efforts to restore anadromous Atlantic Salmon, American Shad, Blueback Herring and other species to the Connecticut River. These species require safe and efficient passage past the Projects during their upstream spawning migrations.

¹ The American Fisheries Society's convention is to capitalize both parts of common names of fish.

² US Department of Commerce, National Marine Fisheries Service, Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Prescription for Fishways; FirstLight, LLC, Turners Falls Hydroelectric Project (P- 1889-085) and Northfield Mountain Pumped Storage Project (P-2485-071) (May 20, 2024) (**hereafter "NMFS" or "DOC", FERC Accession No. 20240521-5074**)

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Juveniles of these species require downstream passage measures to guide them safely past the Projects' turbine intakes on their seaward migrations. The Turners Falls Project currently includes facilities aimed at providing upstream and downstream passage for these species. However, modifications to these facilities are needed to increase their capacity and efficiency, and adequate bypass flows are needed to provide a safe zone-of-passage through the bypass reach to the dam and spillway fishway.

After considering the administrative record and all applicable law, MassDEP issues this WQC with conditions.

II. Federal Law, State Water Quality Standards Law, and Impairments

3. Seldon Gary

January 26, 2025 at 12:39:45 PM

How about a condition that NMPS only discharge effluent that doesn't contain polluting ground

4. Seldon Gary

February 13, 2025 at 10:49:31 PM

Which is it, this or for example from the top of p.69: "While MassDEP includes the following provision from the proposed articles to acknowledge it, MassDEP does not believe it is necessary to comply with the

A. Federal Law

Congress enacted § 401 of the Federal Clean Water Act, 33 U.S.C. § 1341, to provide states and authorized tribes with an important tool to help protect water quality of federally regulated waters within their borders in collaboration with federal agencies. Under § 401, a federal agency may not issue a license or permit to conduct any activity that may result in any discharge into waters of the United States, unless the state where the discharge would originate either issues a WQC finding compliance with existing water quality requirements or waives the certification requirement. Section 401(d) allows the certifying authority to include conditions to assure that the applicant will comply with enumerated Federal Clean Water Act provisions and "other appropriate requirements of State law."³ The 2023 Clean Water Act Section 401 Water Quality Certification Rule applicable to FirstLight's WQC Application directs MassDEP to evaluate whether the activity will comply with applicable water quality requirements. 40 C.F.R. § 121.3(a). The Rule defines "water quality requirements" as "any limitation, standard, or other requirement under sections 301, 302, 303, 306, and 307 of the Clean Water Act, any Federal and state or Tribal laws or regulations implementing those sections, and any other water quality- related requirement of state or Tribal law." 40 CFR 121.1(j).

B. State Water Quality Related Laws

The Massachusetts Clean Waters Act creates "a comprehensive program for protection of the surface and groundwaters of the Commonwealth." *Friends & Fishers of the Edgartown Great Pond, Inc. v. Department of Envtl. Protection*, 446 Mass. 830, 837 (2006). It confers on MassDEP "the duty and responsibility . . . to enhance the quality and value of water resources and to establish a program for prevention, control, and abatement of water pollution." M.G.L. c. 21, § 27. Like the Federal Act, the State Act creates a comprehensive permitting program to ensure water quality standards are met. *See* M.G.L. c. 21, §§ 43 and 44.

More specifically, the State Act confers on MassDEP the authority to:

- Establish standards of minimum water quality which shall be applicable to the various waters or portions of waters of the Commonwealth. *See id.* at § 27(5).
- MassDEP considers the Massachusetts Division of Fisheries and Wildlife's ("MassWildlife") enabling authorities which provide for the protection and management of the inland fish and wildlife resources of the Commonwealth, including, but not limited to, the Massachusetts Endangered Species Act, M.G.L. c. 131A, § 1 et seq. (MESA) and Cold Water Fish Resources regulations at 321 CMR 5.00 as "appropriate requirements of state law" for purposes of § 401 certification.

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- 3. • Prescribe effluent limitations, permit programs and procedures applicable to the management and disposal of pollutants, including, where appropriate, prohibition of discharges. *See id.* at § 27(6).
- Require dischargers to establish monitoring, sampling, record keeping and reporting procedures and to submit to MassDEP data it reasonably needs to carry out the purposes of the State Act. *See id.* at § 27(7).
- Take all action necessary or appropriate to secure to the Commonwealth the benefits of the Federal Act. *See id.* at § 27(3).

Pursuant to M.G.L. c. 21, § 27(5), MassDEP has adopted the Massachusetts Surface Water Quality Standards (SWQS) at 314 CMR 4.00. The Standards establish "designated uses" for different classes of surface waters in the Commonwealth (e.g., fish habitat, recreation) and enumerate the criteria necessary to protect both existing and designated uses. *See* 314 CMR 4.05. *See also* 33 U.S.C. § 1313(c)(2)(A) (2006). For MassDEP to issue a § 401 certification for an activity, water quality must be maintained or restored to protect the existing and designated uses of the pertinent waterbody. *See* 314 CMR 4.03(3)(b). The applicant for a WQC is responsible for providing MassDEP sufficient information to demonstrate compliance with the SWQS and other appropriate requirements of state law.

The Wetlands Protection Act, M.G.L. c. 131, §40, and implementing regulations at 310 CMR 10.00

establish standards for activities conducted in wetland resource areas to protect the quality of public and private water supplies, prevent water pollution, and protect the habitat of aquatic life and wildlife. 310 CMR 10.01(2).

M.G.L. c. 131A, the Massachusetts Endangered Species Act (“MESA”), was enacted to protect rare species and their habitats by prohibiting the “Take” of any plant or animal species listed as Endangered, Threatened, or Special Concern. MESA and its implementing regulations at 321 CMR 10.00, administered by the Natural Heritage and Endangered Species Program (NHESP) of the Division of Fisheries and Wildlife (MassWildlife or MDFW), establish a comprehensive approach to the protection of the Commonwealth’s Endangered, Threatened, and Special Concern species and their habitats by establishing procedures for the listing and protection of rare plants and animals, and outlining project review filing requirements for projects or activities that are located within a Priority Habitat of Rare Species. MassWildlife regulations at 321 CMR 5.00 protect the Commonwealth’s cold water fish resources.

C. Water Quality Impairments at Issue

The SWQS categorize the segments of the Connecticut River just upstream and downstream of the dam as Class B warm waters. *See* 314 CMR 4.06(6)(b): Figure A; Table 7. Class B waters are designated as habitat for fish, other aquatic life, and wildlife, including their reproduction, migration, growth, and other critical functions, and for primary and secondary contact recreation. They can be suitable as a source of public water supply after appropriate treatment. Class B waters are also suitable for irrigation and other agricultural uses, and for compatible industrial cooling and process uses. Class B waters must consistently exhibit good aesthetic quality. The minimum criteria applicable to Class B waters are listed within 314 CMR 4.05(3)(b). Additional minimum criteria applicable to all surface waters are listed within 314 CMR 4.05(5). The Antidegradation provisions of 314 CMR 4.04 require protection of all existing and designated uses of water bodies, and maintenance

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of the level of water quality needed to protect those uses.

The Projects are located within MassDEP water quality Assessment Units MA34122, MA34-01, 34-02, 34-03. *See* 314 CMR 4.06(1) and 314 CMR 4.06(6)(b), Figure 7 and Table 7. As required by the Federal Clean Water Act, MassDEP compiles and submits to EPA every two years a detailed report on the status of its waterbodies, called the Integrated List of Waters. The report includes updated use attainment and impairment decisions for each water body or segment and is subject to public review and comment.

Water quality in the Connecticut River has been affected by the construction and operation of hydroelectric facilities and their impoundments for more than 100 years. The entire Massachusetts part of the river upstream of the Turners Falls Dam is listed as impaired in the Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle. The table below summarizes the applicable impairments.

Table 1 - Impairments

Assessment

Unit ID Description

Length

(miles) Causes of Impairment Source**

MA34122 Gill (cove of

Connecticut River

upstream of Turners

Falls Dams)

160

acres

(Curly-leaf Pondweed*)

(Eurasian Water

Milfoil*) (Fanwort*)
 (Water Chestnut*)
 Streambank
 Modifications/
 Destabilization
 MA34-01 New
 Hampshire/Massach
 usetts state line to
 Route 10 Bridge in
 Northfield
 Introduction of Non-
 Native Organisms
 (Accidental or
 Intentional)
 3.5 (Alteration in Stream-
 side or Littoral
 Vegetative Covers*)
 Escherichia Coli (E.coli) Unknown
 (Flow Regime
 Modification*)
 PCBs in Fish Tissue Unknown
 MA34-02 Impacts from
 Hydrostructure Flow
 Regulation/ Modification
 11.4 (Alteration in Stream-
 side or Littoral
 Vegetative Covers*)
 Route 10 Bridge,
 Northfield to
 Turners Falls Dams
 (NATID: MA00848
 and MA00849) Gill/
 Montague
 (excluding the
 delineated segment;
 Barton Cove
 MA34019)
 Streambank
 Modifications/
 Destabilization
 (Flow Regime
 Modification*)
 Impacts from
 Hydrostructure Flow
 Regulation/ Modification
 (Water Chestnut*) Introduction of Non-
 Native Organisms
 (Accidental or
 Intentional)
 PCBs in Fish Tissue Unknown

MA34-03 Turners Falls Dams
 (NATID: MA00848
 and MA00849),
 Gill/Montague to
 confluence with
 3.7 (Dewatering*) Impacts from
 Hydrostructure Flow
 Regulation/ Modification
 (Flow Regime
 Modification*)
 Impacts from
 Hydrostructure Flow
 Regulation/ Modification
 Escherichia Coli (E.
 Coli)
 Combined Sewer
 Overflows
 Page 7 of 117 Deerfield River,
 Greenfield/Montague
 PCBs in Fish Tissue Unknown
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 Total Suspended Solids
 (TSS)
 Unknown

*TMDL not required (Non-pollutant)

**The sources were obtained from [Water Quality Data Viewer - MassDEP](#)

Source: [download \(mass.gov\)](#), Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle, May 2023, page 167-168.

III. The Project and Facilities

A. Turners Falls Project

Most of the Turners Falls Project, including developed facilities and most of the lands within the FERC Project boundary are located within the municipalities of Erving, Gill, Greenfield, Montague and Northfield. The Turners Falls Dam impounds the upstream segment that is called the Turners Falls Impoundment (TFI). It is an approximately 20-mile-long section of the Connecticut River extending upstream from the dam to the base of Great River Hydro's Vernon Hydroelectric Project and Dam (FERC No. 1904) in Vermont. Most of the TFI lies in MA, however, approximately 5.7 miles of the northern portion of the TFI lies in NH and VT. The TFI is the river segment where the Northfield Mountain Project withdraws and then subsequently discharges water during pumping and generating cycles. These cycles significantly impact the flow and elevation of the TFI. The dam and TFI are depicted in Figure 1 below.

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Figure 1

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The Turners Falls Dam is located at approximately river mile 122 (above Long Island Sound) on the Connecticut River in the towns of Gill and Montague. Key features of the Project are shown in Figure 2 below.

Figure 2

The Turners Falls Dam is located on a "Z turn" in the river, and is oriented on a northeast-southwest axis, with the impounded area on the east side of the dam and extending north. It is depicted above as the Gatehouse, Montague Spillway, and Gill Spillway.

Below the dam, originating at the gatehouse, is the Turners Falls power canal. Paralleling this power canal is a bypassed section of the Connecticut River, referred to as the bypass reach (approximately 2.6 miles long). Associated with the power canal are the two hydroelectric generating facilities owned by FirstLight: Station No. 1 and Cabot Station. Station No. 1 is located approximately one-quarter of the way down the power canal, which is about 2.5 miles long. Water is conveyed from the power canal to a small branch canal feeding the Station No. 1 turbines, before discharging into the bypass reach. Station No. 1 discharges to the bypass reach approximately 0.7 miles downstream from the dam. Cabot Station is located at the downstream terminus of the power canal, where it rejoins the main stem of the Connecticut River. Station No. 1 and Cabot Station discharge into the Connecticut River approximately 0.9 miles and 2.5 miles downstream of the Turners Falls Dam, respectively. In addition to Station No. 1 and Cabot Station, there are two other hydropower facilities on the power canal that discharge into the bypass reach, when operating. Located between the Turners Falls Dam and Station No. 1 tailrace is Turners Falls Hydro, LLC project (FERC No. 2622), which is owned and operated by Eagle Creek Renewable Energy. Also, Milton Hilton, LLC, a FERC non-jurisdictional

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hydroelectric facility owned by a private developer, is located between the Turners Falls Hydro, LLC project and Station No. 1.

The Turners Falls Project is equipped with three upstream fish passage facilities, including (in downstream to upstream order): the Cabot ladder; the Spillway ladder; and the Gatehouse ladder. Fish enter the Cabot ladder below Cabot Station, enter the power canal, and then move 2.1 miles upstream in the canal to the Gatehouse ladder and eventually into the TFI. Those fish bypassing the Cabot ladder move upstream via the bypass reach where they will ultimately encounter the Turners Falls Dam. Fish arriving here are passed upstream via the Spillway ladder into a gallery leading to the Gatehouse ladder and eventually into the TFI.

The downstream fish passage facilities are located at Cabot Station at the downstream terminus of the power canal. Fish moving downstream pass through the gatehouse (which has no racks) and into the power canal. Downstream fish passage facilities at Cabot Station consist of: reduced bar-spacing in the upper 11 feet of the intake racks; a broad-crested weir with an elliptical floor and side walls developed specifically to enhance fish passage at the log sluice; the log sluice itself, which has been resurfaced to provide a passage route; above-water lighting; and a sampling facility.

The operating requirements under the current FERC license include:

- The TFI operating band is from elevation 176.0 feet NGVD29⁴ to 185.0 feet, as measured at the Turners Falls Dam.
- Maintain a continuous minimum flow of 1,433 cubic feet per second (cfs) or inflow, whichever is less, below the Turners Falls Project.
- Maintain a continuous minimum flow of 200 cfs in the bypass reach starting on May 1 of each year and increasing to 400 cfs when fish passage starts by releasing flow through a bascule gate at the dam. The 400 cfs continuous minimum flow is provided through July 15, unless the upstream fish passage season has concluded early, then reduced to 120 cfs to provide a zone of passage for Shortnose Sturgeon. The 120 cfs continuous minimum flow is maintained in the bypass reach from the date the fishways are closed (or by July 16) until the river temperature drops below 7°C, which typically occurs around November 15.

B. Northfield Mountain Project

The Northfield Mountain Project is a pumped-storage facility using the TFI as its lower reservoir. The Northfield Mountain Project is shown in Figure 3 below:

⁴ All elevations in this document are based on the National Geodetic Vertical Datum of 1929 (NGVD29).

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Figure 3

The pumped storage facility is an open-loop system located approximately 5.2 miles upstream of

Turners Falls Dam, on the east side of the TFI. The Project's Upper Reservoir is a human-made structure situated atop Northfield Mountain, to the east of the Connecticut River. During pumping operations, water is pumped from the TFI to the Upper Reservoir. When generating, water is passed from the Upper Reservoir through an underground pressure shaft to a powerhouse cavern and then a tailrace tunnel delivers the water back to the TFI.

The powerhouse contains four reversible pump/turbines operating at gross heads ranging from 753 to 824.5 feet. Each of the four units has an electrical capacity of 291.7 MW, for a total station nameplate capacity of 1,166.80 MW. When operating in a generation mode, the maximum hydraulic capacity (4 turbines) is approximately 20,000 cfs (5,000 cfs/turbine).

The Upper Reservoir has a gross storage capacity of 17,050 acre-feet. Under the current FERC license, the Upper Reservoir may operate between 1000.5 feet and 938 feet, equating to a usable storage capacity of approximately 12,318 acre-feet. This is equivalent to approximately 8,729 megawatt hours (MWh) of stored energy. The Upper Reservoir was constructed to accommodate water up to an elevation of 1004.5 feet as approved by FERC in 1976. In addition, the reservoir retains usable storage capacity down to elevation 920 feet. The usable storage volume between elevation 1004.5 feet and 920 feet is approximately 15,327 acre-feet, which is equivalent to approximately 10,779 MWh of stored energy.

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IV. The FERC Process Settlement Agreements and Agency Recommendations, Comments, and Prescriptions

On October 30, 2012, FirstLight initiated the FERC relicensing process with issuance of its Notice of Intent (NOI) and Pre-Application Document (PAD). The FERC Integrated Licensing Process including implementation of several studies then transpired over the next several years.

On December 2, 2015, FirstLight filed a Draft License Application and on April 29, 2016, it filed a single Final License Application for both Projects, two years prior to license expiration. On December 2, 2020, FirstLight filed separate Amended Final License Applications (AFLAs) for each Project, which included a combined Exhibit E (Environmental Report) for both Projects. Exhibit E of the AFLAs included FirstLight's relicensing proposal relative to Project Operations, Fish Passage, and Recreation. The proposal also included the following plans: Recreation Management Plan, Historic Properties Management Plan, Bald Eagle Protection Plan and Invasive Plant Species Management Plan.

A. Settlement Agreements

As part of the FERC process, FirstLight engaged several stakeholders and entered into two settlement agreements that were ultimately filed with FERC, one being the Flows and Fish Passage Settlement Agreement (FFP Agreement) and the other the Recreation Settlement Agreement (Recreation Agreement). MassDEP decided not to participate in the settlement discussions.

Signatories to the FFP Agreement included FirstLight, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Services (NMFS), Massachusetts Division of Fish and Wildlife (MassWildlife), The Nature Conservancy, American Whitewater, Appalachian Mountain Club, Crabapple Whitewater, Inc., New England Flow, and Zoar Outdoor. The FFP Agreement addressed issues pertaining to a) fish passage, b) flows for fishery, ecological conservation, and recreation purposes, and c) protected, threatened, and endangered species.

Importantly, one of the above signatories, MassWildlife, is the state agency responsible for the protection and management of the inland fish and wildlife resources of the Commonwealth.

MassWildlife's mission also includes conserving and protecting endangered, threatened, and species of special concern pursuant to the Massachusetts Endangered Species Act (MESA; M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00).

The Recreation Agreement contained a Recreation Management Plan (RMP) as an appendix for both the Northfield and Turners Falls projects including proposed recreation protection, mitigation, and enhancement measures. Signatories to the Recreation Agreement included FirstLight, The National

Park Service, Massachusetts Department of Conservation and Recreation (DCR), Towns of Erving, Gill, Montague and Northfield, American Whitewater, Appalachian Mountain Club, Crabapple Whitewater, New England Flow, Zoar Outdoor, Access Fund, Franklin Regional Council of Governments, and the Western Massachusetts Climbers Coalition.

As part of the Recreation Settlement Agreement, FirstLight has agreed to place lands it owns that are not used for specific project activities (*e.g.*, power production, project recreation facilities) along the TFI shoreline, into conservation easement/restriction status to maintain riparian buffers. FirstLight Page 13 of 117DRAFT-1-24-25

will also permanently conserve its lands within Bennett Meadow, and the approximately 1.3-mile-long portion of the New England National Scenic Trail in the Northfield Mountain Project Boundary via a permanent trail easement. Collectively, the conservation easements/restrictions equate to 761.4 acres. In addition, as part of this WQC, MassDEP has established a condition to require implementation of a Riparian Management Plan.

The FirstLight WQC Application includes and is based upon all the terms that were agreed upon in the above settlement agreements, except as discussed otherwise below.

B. Prior Federal and State Participation

Section 10(j)(1) of the Federal Power Act, 16 U.S.C. 791a-828c (FPA), requires the Commission, when issuing a license, to include conditions based on recommendations by federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act, 16 U.S.C. 661-666(e), to “adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)” affected by the project.

Section 10(a)(1) of the FPA requires the project adopted by the Commission to be, in its judgment, “best adapted to a comprehensive plan for ... beneficial public uses, including ... purposes referred to in section 4(e) ...” 16 U.S.C §803(a)(1). This includes consideration of adequate protection, mitigation and enhancement of fish and wildlife, including related spawning grounds and habitat. 16 U.S.C §803(a). Section 10(a)(2) requires that, in making this determination, the Commission consider the recommendations of federal agencies exercising jurisdiction over resources of the state in which the project is located (16 U.S.C §803(a)(2)). Here, the primary interest at the Project is safe, timely, and effective fish passage for the benefit of American Shad and American Eel, as well as habitat considerations for migration, spawning, and rearing for American Shad, American Eel, and Shortnose Sturgeon.

On May 16, 2024, the U.S. Department of the Interior, Office of Environmental Policy and Compliance, filed “Comments, Recommendations, Terms and Conditions, and Prescriptions” (**hereafter “USFWS” or “DOI”**; FERC Accession No. 20240516-5099) with FERC pursuant to sections 10(a), 10(j), and 18 of the Federal Power Act that were prepared by the Department’s National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS) and U.S. Geological Survey (USGS) in accordance with provisions of the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e); the National Environmental Policy Act, as amended (42 U.S.C. 4321-4347); the Federal Power Act (FPA), as amended (16 U.S.C. 791a-828c), and the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531, *et seq.*). The DOI developed its prescription for fishways through a review process that included consultation among fisheries biologists from the USFWS, the National Marine Fisheries Service (NMFS), and MassWildlife.

Importantly, the DOI Comments, Recommendations, Terms and Conditions, and Prescriptions endorsed and incorporated the terms of the FFP Agreement and the Recreation Agreement. The USFWS, an agency within the DOI, was a signatory to the FFP Agreement.

On May 20, 2024, the National Marine Fisheries Service (via the U.S. Department of Commerce) filed with FERC its Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Page 14 of 117DRAFT-1-24-25

Prescription for Fishways (**hereafter “NMFS” or “DOC”**; FERC Accession No. 20240521-5074). The NMFS “developed this preliminary prescription for fishways, as well as the recommended conditions,

5. Seldon Gary

February 22, 2025 at 4:19:31 PM
The word choices included and excluded are sadly disturbing. Recognizing the river as a 'public trust' has significant bearing in this Certificate.

6. Seldon Gary

February 22, 2025 at 4:28:06 PM
Please use the Federal Clean Water Act and the SWQS to protect the aquatic life and its habitat.
Always COMPLY with the SWQS

7. Seldon Gary

February 22, 2025 at 4:36:34 PM
While these may be true 'sometimes' can you prove it is 'ever done' when not answering a need to profit? Hence, my additions.

If the additional information I've added at 12. Flow Notification and Website, p.63 is included, then you and the public will have the information needed to make the proof I request just above.

through a review process that included consultation with the U.S. Fish and Wildlife Service, Massachusetts Division of Fisheries and Wildlife, non-governmental organizations, and the Licensee. These mandatory conditions and recommendations are intended to be consistent with the [FFP Agreement].

" NMFS, p. 5.

NMFS stated that the purpose of the Section 18 preliminary fishway prescription is to identify "the engineered facilities, and operations and maintenance of such facilities, necessary to achieve safe, timely, and effective fish passage conditions and flows for our trust resources." NMFS, p. 9. The NMFS added: "At this filing, our prescriptions for fishways are preliminary. We developed these prescriptions using the best available scientific information. We include specific prescriptive measures that allow amendments through adaptive management to develop final design plans or to correct observed deficiencies." NMFS, p. 5. NMFS endorsed and incorporated the terms of the FFP Agreement, to which it was a signatory, into its Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Prescription for Fishways.

Also on May 20, 2023, MassWildlife filed its Comments, Recommendations, Terms and Conditions with FERC.⁵ MassWildlife was a signatory to the FFP Agreement pursuant to Section 10(j) and 10(a). As discussed below, MassWildlife had additional comments and recommendations concerning invasive species management, canal drawdown species protection plan, bat protection measures, state-listed species permits, and bald eagle protection plan.

C. FirstLight's WQC Application

Importantly, the DOI, USFW and NMFS have consistently endorsed and adopted all the terms of the FFP Agreements, the terms of which FirstLight included in its WQC Application. Thus, the WQC Application is the most up-to-date document with respect to proposed terms and conditions for evaluating issues pertaining to the WQC, as it includes all terms of the FFP Agreement.

V. MassDEP's WQC Findings

A. Introduction

⁵ Rivers are dynamic systems, always changing shape and moving things from their headwaters – downstream like giant conveyor belts. Rivers are public trusts, they are dynamic ecological systems, always changing shape and always moving things from their headwaters downstream (excepting dams delaying movement and pumped storage reversing flows.) Rivers are like giant living beings. As part of this dynamic ecological system and pursuant to the Federal Clean

⁶ Water Act and the SWQS, the quality of water in rivers must be sufficient to support their designated and existing uses. 314 CMR 4.04. Here, the relevant designated and existing uses include aquatic life and its habitat, water related recreation (e.g., boating, swimming) and consistently good aesthetic value. 314 CMR 4.01, 4.04, 4.05(3)(b).

Dams typically adversely affect these uses and riverine processes. Dams that divert water for power and other uses remove water needed for healthy in-stream ecosystems. Peaking power operations can cause dramatic changes in reservoir water levels. This can leave stretches below dams at low water levels or

⁵ FERC Accession No. 20240520-5190.

⁶ The USFW and NMFS were signatories to the FFP Agreement.

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⁷ completely de-watered. There may also be problems if dams suddenly release water or reduce flows causing river levels below the dam to rise or fall suddenly. This is sometimes done to answer the needs of power generation and profit – as is the case with Northfield Project – generally, water is stored in the reservoir during periods of low power demand when it costs less and then released later to generate profits and electricity when demand is

high. These irregular releases destroy natural seasonal flow variations that trigger natural growth and reproduction cycles in many species.

The Northfield Project significantly affects the entire length of the TFI. FirstLight pumps water from

the 20-mile section of the Connecticut River that is upstream of the Turners Falls dam—the TFI—uphill to the Northfield Reservoir. FirstLight then chooses when to pump water back downhill to the TFI through turbines that generate electricity. Both the uphill and downhill pumping operations cause unnatural changes in the river surface elevation on riverbanks⁷ and flow; some report that the river flows backwards at times during pumping and generating modes.⁸ Further, slow-moving or still-water reservoirs can heat up, resulting in abnormal temperature fluctuations which can affect sensitive species. The slowing of river flow allows for the collection of nutrients in the warmer waters, creating habitat for algal blooms and decreased oxygen levels. Other dams decrease temperatures by releasing cooled, oxygen-deprived water from the reservoir bottom. Dams can trap sediment, burying rock riverbeds where fish spawn. Gravel, logs, and other important food and habitat features can also become trapped behind dams. This negatively affects the creation and maintenance of more complex habitat (e.g., riffles, pools) downstream. Dams prevent or hinder fish migration. This limits their ability to access spawning habitat, seek out food resources, and escape predation. Fish passage structures can enable a percentage of fish to pass around a dam, but their effectiveness decreases depending on the species of fish and the number of dams fish must traverse.

B. Project Operations, Turners Falls Project
1. Flow Below the Dam, Station No. 1, and Cabot Station

The WQC Application, which is based on the FFP Agreement, proposes substantial changes to flows below the Turners Fall Dam, Station No. 1, and Cabot Station, resulting in significantly increased and stabilized (reduced peaking) flows that will generally improve conditions to support aquatic life and other designated and existing uses, both in the vicinity of the dam and for many miles downstream of the dam. The relevant river segments are depicted in Figure 4 below.

⁷ The elevation fluctuations have contributed to erosion that has led to impairments for stream side littoral vegetation.
⁸ Typically, pumped storage operations have a closed loop system instead of an open loop system like the Northfield system, which relies upon a 20 mile segment of the Connecticut River for withdrawal and discharge.

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Figure 4

As shown above, the Turners Falls Dam is identified by the references to: Gill Spillway, Gatehouse, and Montage Spillway. The bypass reach is 2.6 miles long, beginning just below the dam and extending down to where it flows below the Cabot Station Spillway and Cabot Station. There is one tributary, Falls River, that enters the bypass reach approximately 0.17 miles below the Turners Falls Dam. Station No. 1 discharges into the bypass reach approximately 0.7 miles below the Turners Falls Dam, as indicated by the reference to Station No. 1 Powerhouse. The proposed changes in flows are summarized in Table 2 below:

Table 2
Current License FFP Agreement & WQC Application

Flow	Location
Period	Flow ^A (cfs)
(cfs)	Location
5/1-7/15 200/400	Turners Falls
Dam (TFD)	
4/1-5/31 6,500 4,290	cfs from TFD;
remainder from	
Station No. 1	
7/16-11/15 120 TFD 6/1-6/15 4,500 2,990	cfs from TFD;
remainder from	
Station No. 1	
11/16-4/30 0 TFD 6/16-6/30 3,500 2,280	cfs from TFD;
remainder from	

Station No. 1

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Current License FFP Agreement & WQC Application

Period Flow (cfs) Location Period Flow^a (cfs) Location

7/1-11/15 1,800 500 cfs from TFD;

remainder from

Station No. 1

11/16-3/31 1,500 400 cfs from TFD;

remainder from

Station No. 1

In sum, flow changes include the following:

- Significant increase in bypass flows and flows below Cabot Station to provide fish passage through the bypass, protect aquatic resources, and increase spawning habitat for the federally endangered Shortnose Sturgeon and American Shad.
- Cabot Station ramping rate restrictions to protect Shortnose Sturgeon spawning and incubation, state listed odonates, and downstream flora and fauna.
- Maintaining stable flow regime below Cabot Station to protect state-endangered Cobblestone Tiger Beetle, federal and state endangered Puritan Tiger Beetle and Shortnose Sturgeon, and state-listed odonates.

• Variable releases from Station No. 1 and Turners Falls Dam for recreational boating and ecological conservation purposes. The releases are also intended to introduce natural flow variability to the bypass reach, with the number of releases, schedule of releases, and quantity of flows released generally crafted to align with the patterns of naturally occurring flow events within the Connecticut River. The variable releases will not adversely affect, and are expected to benefit, the aquatic and riparian resources within the Turners Falls bypass reach.⁹

• Significant improvements in aquatic life habitat from Cabot Station to the Holyoke Dam (FERC No. 2004), approximately 10 miles downstream from increased, more stabilized flows, reduction in peaking, and passage of naturally routed flows. The higher bypass flows, higher minimum flows, and seasonal naturally routed flows below Cabot Station will provide more persistent habitat relative to current conditions. These flow changes will mimic naturalized flows, which results in a more natural gradient of habitat availability and increase habitat persistence.

The USFW summarized the results of FirstLight's instream flow study to assess impacts of current operations on aquatic resources within the Turners Falls Project-affected area, including the bypass reach.

¹⁰ In general, there will be substantial increases in habitat as measured by the percent of maximum Weighted Usable Area (WUA)¹¹ in the bypass reach, including the area just below the dam. For

⁹ USFW, Comments and Recommendations, pp. 4-10.

¹⁰ USFW, Comments and Recommendations, pp. 6-10.

¹¹ WUA is a microhabitat metric that measures the wetted area of a stream based on its suitability for aquatic organisms or recreational activities. It's calculated by multiplying the total surface area with a certain combination of hydraulic conditions

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example, for migratory fish, in some areas flows will provide an average of 84 percent of maximum WUA for spawning sea lamprey; 73 percent of maximum WUA for spawning shad; 88 percent of maximum WUA for juvenile shad; 96 percent of maximum WUA for spawning sturgeon; 100 percent of maximum WUA for sturgeon eggs and larvae; and 73 percent of maximum WUA for sturgeon fry. For resident riverine species (nonmigratory), the percent of maximum WUA provided varied by species, life stage, and location. Generally, the high flows provided in the spring lowered the suitability of spawning habitat, likely due to excessive velocities, primarily in some of the area just below the dam. The exception is for Walleye (*Sander vitreus*), where flows provide greater than 95 percent of maximum WUA. For juvenile fish, high spring flows lower habitat suitability for juvenile Fallfish (*Semotilus corporalis*); juvenile and adult Longnose Dace (*Rhinichthys cataractae*), Walleye, and

8. Seldon Gary

February 5, 2025 at 5:58:37 PM

Really?

This hardly seems possible?

Tessellated Darter (*Etheostoma olmstedi*). However, as flows decrease from May through June, habitat suitability generally increases.

The relative benefit of the proposed flows over those currently required include: over 16 times more flow in the spring; from 11 to 25 times the flow in the early summer; 18 times the flow in the summer and early fall; and 15 times the flow over the winter. These flows provide greater than 70 percent of maximum WUA for all life stages of the federally endangered Shortnose Sturgeon as well as spawning habitat for anadromous Sea Lamprey and American Shad in the spring and juvenile shad in the summer and fall. Additionally, it provides from 53 to 81 percent of maximum WUA for resident riverine fish species from summer through early spring.

The USFW and NMFS supported all flows in the FFP Agreement, including bypass flows, minimum flows below Cabot Station, Cabot Station ramping rates, variable releases from the dam and below Station No. 1, and thus included them as Section 10(j) recommendations for any new license issued to FirstLight.

¹² For the Cabot Station Emergency Gate use, the USFWS deferred any conclusions to the NMFS, as the lead federal agency on issues related to Shortnose Sturgeon, noting that: “[a]brupt increases in velocity, extended periods of velocities exceeding those preferred by sturgeon, and sediments mobilized upstream of the spawning area all have the potential to impact spawning behavior and early life stages.”¹³ In response, the NMFS stated: “Upon license issuance, the Licensee will use the Cabot Station Emergency Gates under the following conditions: a) a Cabot load rejection that could cause overtopping of the canal, b) dam safety issues such as potential canal overtopping or partial breach, and c) to discharge up to approximately 500 cfs from April 1 to June 15 for debris management. If the Licensee desires to discharge higher flows during April 1 to June 15, the Licensee shall coordinate with NMFS to minimize potential impacts to Shortnose Sturgeon in the area below Cabot Station.” This is identical to the WQC Application’s proposed Article A180, Cabot Station Emergency Gate Use.

The USFWS commented that the flow related measures will require vigilant monitoring and management of project operations to ensure compliance. ¹⁴ The WQC Application’s proposed Article by the composite probability of use for that combination. See Payne, Thomas R., The Concept of Weighted Usable Area as Relative to Suitability Index (2003).

¹² USFW, Comments and Recommendations, pp. 6-12; NMFS, pp. 33-53.

¹³ USFW, Comments and Recommendations, pp. 11-12.

¹⁴ USFW, Comments and Recommendation, p. 13.

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A200 calls for the Licensee to develop a Project Operation, Monitoring, and Reporting Plan, in consultation with the USFWS and other agencies, that includes a description of how the Licensee will comply with operational requirements, including bypass reach, below-Cabot Station flow protocols, and TFI water level management. WQC Application proposed Article A200 also requires documenting and categorizing allowable deviations from operational requirements.

MassDEP concurs with the USFW and NMFS recommendations, comments, and preliminary prescriptions for flows below the Turners Falls Dam, which are based on the FFP Agreement. The WQC Application is consistent with these recommendations, comments, and preliminary prescriptions.

8 MassDEP finds that such flows will comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards at 314 CMR 4.00, and other water quality-related requirements of state law, subject to Special Condition Nos. 1-12 (with changes noted below to proposed license articles at Special Condition 10 (proposed Article A190) and Special Condition 12 (proposed Article A210)).

(a) Flow Limitations Immediately Below the Dam Are Necessary

The FFP Agreement, as incorporated in the WQC Application, would increase the typical flows from immediately below the dam down to Station 1 (Reach 1) from July 1 to November 15 from approximately 140 cfs to 500 cfs. The current flows of 140 cfs have occurred for decades.

There was an interest from some commenters to increase flows to approximately 1,500 to 2,500 cfs in that section between July 1 and November 15, which would be closer to the agreed upon flows starting just 0.6 miles downstream at Station No. 1. The commenters contend such increased flows are

necessary to increase available habitat for common fluvial fish species, provide more recreational opportunities (*i.e.*, whitewater boating), and enhance aesthetics.

MassWildlife, however, sought the compromise of 500 cfs to protect two sensitive native plant species: Tufted Hairgrass *Deschampsia cespitosa* ssp. *glauca* (MESA Endangered) and Tradescant's Aster, *Symphotrichum tradescantii* (MESA Threatened). The MESA and regulations establish procedures for the listing of plant and animal species as endangered, threatened, or special concern and protect these species and their habitat. M.G.L. c. 131A; 321 CMR 10.00. MassWildlife's Natural Heritage and Endangered Species Program, within the Massachusetts Department of Fish and Game, is responsible for this highly specialized area and MassDEP routinely relies on the expertise of its staff. *See* Appendix A, State-Listed Plants of Focus in the Bypass Reach for Turner's Falls Relicensing, Massachusetts Division of Fisheries and Wildlife.

Tufted Hairgrass is a native, long-lived grass found on river-scoured bedrock, cobble and gravel shores along a small portion of the Connecticut River in Massachusetts. The largest extant native occurrence is located within the bypass reach of the Turners Falls Dam. The majority of these plants are found in the plunge "pool" just downstream of the dam, although there are a few smaller occurrences between the pool and the end of the bypass reach (Reach 3). There was a recent single small occurrence of the plant identified in the TFI, representing the only known location of this species located outside of the bypass reach in Massachusetts. Historically, a population was reported in the Merrimack River but it has not been observed in the last 25 years.

The current New England range of Tufted Hairgrass includes the Connecticut River in Connecticut,

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Massachusetts, Vermont, and New Hampshire, as well as the bigger rivers in northern Maine (Penobscot, Kennebec, etc.). These areas are heavily scoured by powerful spring flows and ice but are then not inundated during the growing season except during occasional, temporary large-scale storm events. Flowers are wind pollinated and seed dropped on bare or nearly bare soils and rock. Tufted Hairgrass requires significant periods of dry, exposed conditions during the growing season to flower, distribute pollen by wind, and set seed. It is classified as facultative wet (found in an area considered a wetland) where it is associated with large rivers with high, scouring flows in spring and rocky and gravelly shorelines, river shore cliffs and outcrops.

Tradescant's Aster is a New England native wetland/riparian, facultative wet species; also considered endemic. It occurs at two locations in Massachusetts, within the bypass reach of the Turners Falls Dam and within the impoundment of the Holyoke Dam. Numbers are relatively equal between these areas. Relative to Tufted Hairgrass, Tradescant's Aster co-occur from the lowest Tufted Hairgrass elevation but extend further up the banks (*i.e.*, to a higher elevation than Tufted Hairgrass) until it is outcompeted/shaded out by upper elevation plants. It is currently found in the Connecticut River basin in Massachusetts, Vermont, and New Hampshire. There are disjunct populations in Maine. Habitat in these locations includes gravelly and sandy areas of certain lakeshores and streams. Tradescant's Aster is small-insect pollinated.

MassWildlife assessed the potential impacts on the two plant species in 2018 and again in 2024. Tufted Hairgrass habitat can be viewed as a horizontal band of habitat in the bypass reach that is characterized by high scour in spring/fall and likely ice scour in winter. The horizontal extent is limited by suitable substrate that give Tufted Hairgrass and Tradescant's Aster an advantage, as both are capable of rooting in very limited soil (*i.e.*, rock crevices/cracks) and withstanding persistent high flows outside the growing season. The vertical lower extent of habitat is limited by persistent inundation. The vertical upper extent is limited by the extent of high scour from flows and ice. In this area of the bypass reach (Reach 1), almost all the rocks have limited elevation. So, the increase in water surface elevation from increased flows will decrease the amount of habitat available. On the shores of the "pool," the rocks make up the bank, but the vertical limit of habitat for these two plants is limited by the depth of scour from ice/seasonal flows and substrate.

9. Seldon Gary

February 18, 2025 at 1:29:17 PM

This "is consistent" language is not adequate.

Please maintain consistency throughout the Certificate with the statement on p.6: "The applicant for a WQC is responsible for providing MassDEP sufficient information to demonstrate compliance with the SWQS" Always COMPLY with the SWQS in this Certificate!

Overall, MassWildlife's field observations and analyses confirmed that both Tufted Hairgrass and Tradescant's Aster are clustered in lower elevations and that increased flows rapidly lead to extensive inundation of both plants in the plunge pool area. A MassWildlife botanist found that approximately 40% of Tradescant's Asters and their habitat at this site were inundated at 500 cfs and 90% at 1500 cfs. For Tufted Hairgrass, 30% were inundated at 500 cfs and nearly 100% by 1,500 cfs. This is consistent with the 2018 qualitative observations, and is contrary to First Lights' October 2017 report, which assumed that plants were evenly distributed by elevation and that impacts increased incrementally as flows increase.

Generally, MassWildlife concluded that inundation of these plants outside of seasonal norms will impact reproduction (from the formation of the flowers through pollination and seed dispersal). In normal river systems, a single year or even several years of rainy summers would impact reproductive success. But reproductive failure from extremely rainy or highwater years would not occur with a high frequency, and populations are able to rebound from such variations and thrive during normal and dry years. Changing the agreed flows of 500 cfs to upward of 1400 cfs or even 2500-4500 cfs for

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whitewater boaters, as advocated by some, would functionally introduce high spring floods year-round into this otherwise dry section of the upper bypass reach. MassWildlife believed that this persistent inundation would lead to a catastrophic loss of these populations and, potentially, permanent extirpation of Tufted Hairgrass from Massachusetts. Such a result would be inconsistent with the spirit, intent, and requirements of MESA and its implementing regulations.

Sub-populations further downstream in the bypass reach will likely be heavily impacted under the proposed minimum summer/fall flows below Station 1 (1,500-1,800 cfs, FFP Agreement). However, in consideration of other species, recreational, and tribal interests, MassWildlife elected not to push for further reductions in the Turners Falls Dam spill flow during settlement discussions. Instead, MassWildlife agreed to flows of 500 cfs below Turners Falls Dam during the summer months despite the still significant impacts (>30-40% loss) that are likely to occur to the primary plunge pool sub-population.

If flows in the bypass reach were to be re-balanced by decreasing Station No. 1 flows and increasing spill flows from Turners Falls Dam to 1,500-1,800 cfs, the inundation would result in the loss of >95% of Tufted Hairgrass populations – and most of Tradescant's Aster populations – in the bypass reach. For Tufted Hairgrass specifically, this would mean a >95% loss to the only known population of this sub-species in Massachusetts. While there is a small occurrence of Tufted Hairgrass in the TFI, it does not meaningfully contribute to the conservation of Tufted Hairgrass, primarily because the habitat is not sufficiently supportive; in addition, MassWildlife does not anticipate long-term persistence of this subpopulation under the anticipated increase in impoundment variability needed to help FirstLight naturalize flows downstream of Cabot Station. Although this will likely impact this and other rare plants in the impoundment, MassWildlife agreed to this increased operational flexibility with the understanding that protection of rare plants in the plunge pool area of the upper bypass reach would be prioritized over habitat for common native fishes and generalized macroinvertebrates, which are poised to see very substantial and broad benefits under the FFP Agreement, despite the 500 cfs flow limitation in Reach 1.

Under the agreement, generalist species will experience dramatic year-round expansion of habitat quantity and quality throughout the bypass reach, including Reach 1 where minimum flows in the summer are slated to increase by a factor of 4. MassWildlife noted that these generalist species will also see dramatic improvements to habitat quality and persistence in the >25 miles downstream of Cabot Station as a result of the flow stabilization measures required under the Agreement.

9 MassWildlife's position is consistent with the SWQS. The SWQS designate the most sensitive uses for which the waters of the Commonwealth are to be enhanced, maintained and protected; prescribe the minimum water quality criteria required to sustain the designated uses; and require the achievement of designated uses and the maintenance of existing water quality. 314 CMR 4.01(3). As to hydrologic

10. Seldon Gary

February 18, 2025 at 2:56:51 PM
I'm not persuaded by this improper "most sensitive use" designation. I find a tortured logic structure that ignores the Licensee basic Public Trust responsibilities to the River.

On the other hand I applaud the vigorous effort to COMPLY with the SWQS in this Certificate!

11. Seldon Gary

February 22, 2025 at 5:57:54 PM
Way too little flow. Use the recommendations of the Tribal Coalition, the Nolumbeka Project.

12. Seldon Gary

February 18, 2025 at 3:13:06 PM
Flip the script!
Find ways to use a bold legal interpretation, like this one, to include the Indigenous voices of the Tribal Coalition, the Nolumbeka Project.

conditions in the context of a license for a hydroelectric power facility, the SWQS state: "When the Department issues a 401 Water Quality Certification of an activity subject to licensing by the Federal Energy Regulatory Commission, flows shall be maintained or restored to protect existing and designated uses. 314 CMR 4.03(3)(b). The SWQS establish classes and uses of Commonwealth waters, with "[e]ach class identified by the most sensitive, and therefore governing, water uses to be achieved and protected." 314 CMR 4.05(1).

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Antidegradation provisions in the SWQS include the protection of existing uses, such as the level of water quality necessary to protect and maintain these uses. 314 CMR 4.04(1). Existing Uses are defined as the designated uses and any other uses actually attained in a water body on or after November 28, 1975. 314 CMR 4.02 (Existing Use).

Where waters have multiple designated uses, criteria are established to support the most sensitive use. 40 CFR 131.11(a)(1). Aquatic life is typically the governing use because it is usually the most sensitive use. See 314 CMR 4.05(1). Aquatic life is defined in the SWQS as "[A] native, naturally diverse, community of aquatic flora and fauna including, but not limited to, wildlife and threatened and

10 endangered species." 314 CMR 4.02 (Aquatic Life). Thus, the SWQS protection of the Aquatic Life use explicitly applies to aquatic plants ("flora") and to threatened and endangered plant species.

EPA's Water Quality Standards Handbook ("Handbook") provides relevant guidance on the interpretation of state water quality standards. It addresses the perceived equivalency of fish populations and recreation, clarifying that "[e]ven though the shorthand expression 'fishable/swimmable' is often used, the actual objective of the Act is to 'restore and maintain the chemical, physical, and biological integrity of our Nation's waters' (section 101(a)). The term 'aquatic life' would more accurately reflect the protection of the aquatic community that was intended in section 101(a)(2) of the Act." Handbook, Section 4.4.2.

An aquatic community should be protected even in the absence of a fish population or recreation: "An existing aquatic community composed entirely of invertebrates and plants, such as may be found in a pristine alpine tributary stream, should still be protected whether or not such a stream supports a fishery." While a small and marginal population may be considered an artifact and need not be protected, "[n]on-aberrational resident species must be protected, even if not prevalent in number or importance." Handbook, Section 4.4.2. Even if not explicitly cited in a state's regulations, the Handbook notes that "[w]here a population consist of a threatened or endangered species, it may require protection under the Endangered Species Act." Handbook, Section 4.4.2.

11 MassDEP concurs with the analysis of MassWildlife that flows limited to 500 cfs immediately below Turners Falls Dam (Reach 1) during the summer months are necessary to meet the requirements of the SWQS. The plant species present below Turners Falls Dam, are unquestionably classified as aquatic/wetland species and included in the definition of Aquatic Life Use, which specifically includes aquatic flora as well as fauna and specifically refers to threatened and endangered species. 314 CMR 4.02 (Aquatic Life). The Aquatic Life Use in this Class B water is protected as a designated use. 314 CMR 4.05(3)(b). These two plant species are currently present below the Turners Falls Dam, and therefore are also protected as an existing use. 314 CMR 4.02 (Existing Use); 314 CMR 4.04(1). There is ample evidence in the record that the populations of these two plant species are stable and found in habitat to which they are suited; they are not aberrational or artifact populations. Even if the species are present only because of the dam, they remain protected as an Existing Use under the SWQS.

12 The limitation of flows to 500 cfs in the summer months was agreed to by MassWildlife as a signatory to the FFP Agreement and included in its Comments, Recommendations, Terms and Conditions, despite the still significant impacts (>30-40% loss) that are likely to occur to the primary plunge pool sub-population. This constitutes a reasonable effort to accommodate other uses. MassDEP accepts the judgment of MassWildlife as to the adequacy of this flow to protect the two plant species. The Page 23 of 117DRAFT-1-24-25

definition of Aquatic Life in the SWQS specifically references threatened and endangered species;

13. Seldon Gary

February 18, 2025 at 3:14:41 PM
Here, DEP argues it must COMPLY with the SWQS.
Always COMPLY with the SWQS in this Certificate!

14. Seldon Gary

February 10, 2025 at 8:44:57 PM
Add real-time, and 12-hour window into the future flow measurements, in and out, for flows at the NMPS intake/ tailrace. Also water quality test results that are both regularly timed and tuned to be able to determine whether the ground up fish NMPS pushes into the River is or is not an effluent release in compliance with the SWQS. Please see my changes at p.62, Special Condition #12, Flow Notification and Website

15. Seldon Gary

February 10, 2025 at 8:45:37 PM
With a tip of the hat to Johnnie Cochran:
If FirstLight will not comply, DEP must DENY!

therefore, MassDEP views protection afforded these species under MESA, implemented by MassWildlife, to be an appropriate water quality related requirement of state law properly included in this Certification.

The Aquatic Life Use is typically the most sensitive use, and in most cases takes precedence over other uses. 314 CMR 4.05(1); Water Quality Standards Handbook, § 4.4.2. The flows established to protect the rare plant species may have an effect on recreational canoeing below the dam, but studies have confirmed that this section is navigable by boat (canoe, kayak, etc.) at 500 cfs. The segment is not listed as impaired for secondary contact recreation, which includes boating.

Finally, there is no evidence to support a conclusion that habitat for the two rare fish species identified by one commenter, the Burbot and the Long-nosed Sucker, is an existing use; these species are not currently present, nor would they return to the area if flows were increased. Tufted Hairgrass and Tradescant's Aster are currently present, stable populations, qualifying as an existing aquatic life use that takes precedence over habitat for fish species not currently present and therefore not an existing use.¹⁵

Accordingly, as discussed above, MassDEP adopts as conditions of this Certification, the flow requirements for below the dam in the bypass reach that were agreed to in the FFP Agreement and incorporated into the WQC Application, finding they are necessary to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law.

2. Flow Notification Website

The WQC Application includes proposed Article A210, titled Flow Notification Website. The proposed article is intended to provide greater transparency regarding flows related to the Turners Falls Project to facilitate access and support for designated uses, including boating, fishing, and swimming. It would require the Licensee to provide a website with: (1) real-time data on an hourly basis for TFI water elevations (as measured at the dam), Turners Falls Dam total discharge, and Station No. 1 discharge; (2) the anticipated Turners Falls Dam total discharge and the anticipated Station No. 1 discharge for a 12-hour window into the future, on an hourly basis; and (3) the starting and ending time/date of the annual power canal drawdown, one month prior to the drawdown.

MassDEP supports these measures, but is amending the proposed Article A210, Special Condition 12 in this WQC, to require additional quarterly reporting for compliance assessment purposes, as specified in Special Condition 12. Accordingly, MassDEP adopts as Special Condition 12 of this Certification, the flow notification website provisions that were agreed to in the FFP Agreement and incorporated into the WQC Application along with the changes noted above, finding they are necessary to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law.

¹⁵ Flows for Shortnose Sturgeon are discussed below in the Turners Falls Project Fish Passage section.

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3. Turners Falls Impoundment Water Level Management

The WQC Application includes proposed Article A190, titled Turners Falls Impoundment Water Level Management, to govern TFI water levels. The proposal includes the water elevation ranges of 176-185 feet NGVD 2916

, as measured at the Turners Falls Dam; limits on the rate of rise to be less than 0.9 feet/hour from May 15 to August 15 from 8:00 am to 2:00 pm to protect state listed odonates known to occur in the TFI during the emergence and eclosure period, with certain qualifications; and allowable Naturally Routed Flow (NRF) deviations from +/-10% to +/- 20%.

FirstLight is presently allowed by its license to fluctuate water levels in the TFI in the range of 176-185 feet. However, FirstLight has never been issued a WQC, so the impacts from such fluctuations have never been evaluated for compliance with the SWQS. As discussed below, FirstLight has not provided MassDEP with the information it needs to determine whether the full range of 176-185 without limits would comply with the SWQS.

16. Seldon Gary

February 13, 2025 at 11:06:53 PM
 With a tip of the hat to Johnnie Cochran:
 If FirstLight fails to comply,
 DEP must DENY!

In response to MassDEP's August 15, 2024, information request 4, FirstLight provided two operations curves. One reflects current operations and the other proposed future operations. They are respectively titled: Turners Falls Impoundment – 10, 50, 90% Exceedance Elevations and Mean Elevation under Baseline (existing) Conditions ("Existing Exceedance Curves") and Turners Falls Impoundment – 10, 20, 90% Exceedance Elevations and Mean Elevation under the FFP Settlement Agreement ("Future Exceedance Curves"). They are provided at Appendix B.

The facility has generally always operated between elevations of approximately 178.8-183.4, with slight variations at the top and bottom for the 10/90% parameters.¹⁷ See Appendix B.

¹⁸ FirstLight's erosion

related model for the proposed operating conditions shows the TFI elevation at 179 feet or above approximately 96% of the time.¹⁹ That equates to going below 179 approximately 4% of the time (4% of 365 = 14.6 days). For existing operations, FirstLight operates at or above 178.8 feet approximately 98% of time.

²⁰

FirstLight's proposed modelled scenarios that include the FFP Agreement generally do not appear to vary substantially from the preceding discussion. They project the annual operating range of approximately 179-184.2, with slight variations at the top and bottom for the 10/90% parameters. See Appendix B.

¹⁶ NGVD 29 stands for National Geodetic Vertical Datum of 1929. It is a system that has been used by surveyors and engineers for most of the 20th Century. All references to surface water elevation in this WQC are measured according to NGVD 29 and the reference to NGVD will not be repeated in this document.

¹⁷ Table 3.3.2-1 of FirstLight's Pre-Application Document identifies the *minimum elevation* as 179, stating: "Although the FERC license allows FirstLight to draw the Turner Falls Impoundment to elevation 176.0 feet msl, which occurs during certain operating scenarios, FirstLight generally maintains the impoundment higher than 176.0 feet msl to maintain sufficient head at the gatehouse."

¹⁸ FirstLight Pre-Application Document, p. 3-24 and p. 4-80, Figure 4.3.1.3-7: Turners Falls Impoundment- Annual Elevation Duration Curves, Hourly 2000-2009; Relicensing Study Report 3.3.9, page iii, noting that the median elevation as measured at the dam for 2000 to 2010 was 181.3 msl.

¹⁹ Supplemental BSTEM Modeling Report Reflecting Operating Conditions in the Flows and Fish Passage Settlement Agreement (March 2024), p. 2-15, pdf page 21 (Modeled Hourly WSEL and Energy Grade Line Slope at Transect BC-1R in Barton Cove. FERC Accession 20240322-5086

²⁰ Relicensing Study 3.1.2, Operations Impact on Existing Erosion and Potential Bank Instability Study Report (October 2016), p. 5-16, pdf page 367. FERC Accession 20161014-5107.

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FirstLight confirmed this in its response to comments on the FFP Agreement that it filed with FERC.²¹

It stated that it is "speculation that expanded use of the upper reservoir would worsen dewatering problems" MassDEP interprets this to mean that the facility is proposing to operate consistent with what it has modeled and the lowest TFI elevation will be 178.8, with very infrequent outliers. In another response to comments filed by FirstLight, it stated that water levels in Barton Cove "will be virtually the same as baseline conditions"²²

Despite this, FirstLight indicated in its comments that it would need to operate in the full range of 176-179 without limitations. However, FirstLight failed to provide sufficient information for MassDEP to determine that operating in this range without limitations would comply with the SWQS, for the reasons discussed below.

The photos at Appendix C depict the typical lowest drawdown to approximately 179 feet. Even the typical lowest drawdown to approximately 179 feet exposes land under water. In contrast, the photos at Appendix D depict what appears to be an outlier drawdown between 176 and 179 feet, where more land under water is exposed.

²³ It is noteworthy that the photos at Appendix D were taken approximately 6 miles upstream from the Turners Falls Dam near Saco Lane in Gill, where the impacts of drawdowns should be less than impacts at points closer to the dam, such as Barton Cove.

Commenter Andrew Fisk, PhD, as Northeast Regional Director for American Rivers, reported that on June 12-13, 2021, FirstLight conducted another outlier drawdown to 177.5 feet, which "stranded boats

16

17. Seldon Gary

February 13, 2025 at 11:07:25 PM
Again, with a tip of the hat to
Johnnie Cochran:
If FirstLight fails to comply,
DEP must DENY!

Humorously framed (I hope) but
serious intent. DEP has the
authority to require the Licensee
to comply, in order to use our
public trust.

at the [Franklin County Boat Club] located at Barton Cove, impacting a designated and existing use of recreation. While pumping to this level below 179 feet has not occurred often in the term of the current license, it is quite likely to occur more frequently over the coming license term.”²⁴ This drawdown drew prompt attention from the local media because of the significant departure from prior elevations and concerns about impacts on the designated and existing uses for aquatic life and recreation.

²⁵ See

Appendix E, photos.

The Town of Montague, where Turners Falls is located, commented in a public comment dated May 29, 2024, noting: “the Town’s concern regarding continuation of an operating elevation range of 176 to 185 feet in the TFI, this range accommodates what would be extremely low water levels, which have not been shown necessary to support past utility operations and which the applicant itself has previously indicated are not foreseeably necessary in the future. The Town would argue that 179’ is a sufficient low-end elevation threshold to operate under the normal range of operating conditions, with clearly

²¹ FERC Accession # 20230612-5216: 20230612 FirstLight Response to FFP Settlement Comments.

²² FERC Accession #20240708-513520240708 FirstLight Response to Recommendations and Comments. FirstLight’s reliance in the comments upon Study 3.6.6, Assessment of Effects of Project Operation on Recreation and Land Use, is misplaced. That is a 2016 study that was based upon existing operations and pre-dated the FFP Agreement. It therefore does not consider future operational impacts, particularly for how FirstLight might operate in the future for the range of 176-179.

²³ The photos at Appendix D depict a rare drawdown below 179 that occurred on September 9, 2023, possibly to approximately 177.5.

²⁴ The comment letter is dated June 3, 2024.

²⁵ Low water levels for parts of Connecticut River in Franklin County, WWLP (June 15, 2021)—the following link includes the related story and several photographs of impacts from the low water levels: <https://www.wwlp.com/news/local-news/franklin-county/low-water-levels-for-parts-of-connecticut-river-in-franklin-county/>

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defined protocols to govern emergency conditions that might require lower levels. Absent this standard and procedure, the utility is empowered to take action that may be detrimental to the TFI’s water quality without good cause.”

The Connecticut River Conservancy commented on June 3, 2024, that MassDEP “should require that 100% of the time during daylight hours, the river height must be above 179 ft to ensure safety and navigability for boats at Barton Cove.” The Franklin Regional Council of Governments also commented on June 3, 2024, generally asserting that the TFI range should be confined to 179-184 feet and specifying other limitations it desired.

17 FirstLight failed to provide sufficient information for MassDEP to determine that operating in the range of 176-179 without sufficient limitations would comply with the SWQS. For example, it failed to assess or model impacts regarding aquatic life, boating, and swimming in the full range of 176-179 feet throughout the entire 20-mile long TFI. FirstLight’s operations models focused on the range of approximately 179-184.2 feet, and *not* the full extent to which they anticipate using the entire range of 176-179 feet in the future.

The SWQS include three different provisions at issue here. First, the SWQS prevent degradation of surface waters, otherwise known as anti-degradation. 314 CMR 4.04. The quality (which includes quantity) of water must be sufficient to support designated and existing uses. Here, the relevant designated and existing uses include aquatic life and its habitat, water related recreation (e.g., boating, swimming) and consistently good aesthetic value. 314 CMR 4.01, 4.04, 4.05(3)(b).

Designated and existing uses that could be unsupported by unlimited impoundment levels in the full range of 176-179 feet include: boating, swimming, aquatic habitat in the littoral zone (e.g., benthic infauna, amphibians, turtles (during winter and non-winter periods)).²⁶ Fish and other aquatic life that rely upon the area for benthic infauna or amphibians as a food source could also be adversely affected. FirstLight failed to provide sufficient information to determine that allowing unlimited impoundment levels in the full range of 176-179 feet would comply with the anti-degradation rule.

Second, when MassDEP issues a WQC “of an activity subject to licensing by [FERC], flows shall be *maintained or restored* to protect existing and designated uses.” 314 CMR 4.03(3)(b) (emphasis added). Using the full range of 176-179 without limitations would decrease flows in the TFI, leaving expanses

18. Seldon Gary

February 22, 2025 at 7:22:52 PM
Special Condition 10 constraints
are far to loose, please consider
my changes and comments

19. Seldon Gary

February 22, 2025 at 7:26:33 PM
The possibility of round the clock
operation should not be allowed.
Even as a heavily impounded
river, the river must be allowed
it's natural flow for at least a
majority of every day.

of land under water exposed, and would not protect existing and designated uses such as aquatic life and its habitat and water-related recreation. FirstLight failed to present any evidence to the contrary.

Third, under 314 CMR 4.05(b), all surface waters shall be "free . . . from alterations that adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, or adversely affect populations of non-mobile or sessile benthic organisms." The alterations caused by unlimited fluctuations between 176-179 would likely adversely affect the physical or chemical nature of the "littoral zone" is often considered the most fertile and diverse part of the river ecosystem. This zone provides food and shelter for a variety of aquatic organisms, including fish, amphibians, invertebrates, insects, and water birds. Healthy littoral zones are often characterized by emergent plants and submerged plants. A large and productive littoral zone is considered an important characteristic of a healthy lake or river.
https://en.wikipedia.org/wiki/Littoral_zone#:~:text=The%20littoral%20zone%2C%20also%20called,is%20close%20to%20the%20shore

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the bottom, interfere with the propagation of fish or shellfish, and adversely affect populations of nonmobile or sessile benthic organisms. FirstLight failed to present any evidence to the contrary. Given the above, MassDEP has amended proposed Article A190, now Special Condition 10, and included it as a condition to provide reasonable constraints and prevent unlimited fluctuations down to 176 feet. MassDEP finds that these limitations are necessary for compliance with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition 10, providing reasonable constraints and preventing unlimited fluctuations down to 176 feet.

27

C. Project Operations, Northfield Mountain Project

FirstLight has proposed to operate the Northfield Mountain Project in accordance with proposed License Article B100, titled Project Operations, which was agreed to as part of the FFP Agreement. The proposed article provides that the Northfield Mountain Project would be run in accordance with its existing agreement with the United States Army Corps of Engineers (USACE), which governs how the Project will operate during flood conditions and coordinate its operations with the Licensee of the Turners Falls Project.

It also provides that FirstLight would operate the Northfield Mountain Pumped Storage Project upper reservoir between elevation 1004.5 and 920.0 feet. This is a proposed increase of 3,000 acre-feet, from the current range between 1000.5 and 938 feet. The upper reservoir was constructed to accommodate water up to an elevation of 1004.5 feet as approved by FERC in 1976. In addition, the reservoir retains usable storage capacity down to elevation 920 feet. The usable storage volume between elevation 1004.5 feet and 920 feet is approximately 15,327 acre-feet, which is equivalent to approximately 10,779 MWh of stored energy.

In response to MassDEP's August 15, 2024, information request number 4, FirstLight stated that it proposed this change for several reasons: to provide flexibility, which could support additional or sustained activation of energy reserves in New England to address any fuel supply-related or other contingencies that may arise. The increased flexibility will improve FirstLight's ability to respond to other unforeseen system emergencies, which FirstLight contends will become more important with increased grid reliance on renewable energy sources.

FirstLight stated that the only aspect of water intake/discharge that may change with the ability to use the full extent of the upper reservoir storage capability at Northfield is the total number of hours of pumping and generation between cycles. In its typical operations, the Northfield Mountain pumped storage facility does not regularly cycle the full Upper Reservoir up and down on a daily basis. For context, filling the upper reservoir from empty to its expanded capacity would take approximately 14-15 hours, and fully emptying again would require over 9 hours of generation. By increasing the storage volume in the upper reservoir, FirstLight can better manage and smooth out pumping operations to meet the electrical grid needs. This expansion provides FirstLight with more time to forecast and schedule pumping and reduces the frequency of refills with less volatility in the TFI.

27 The mean was derived from the Future Exceedance Curves.

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MassDEP has determined that this change, in combination with the TFI impoundment elevation restrictions discussed above, will have no significant impact on water quality, fish, plants, wildlife, endangered species, and erosion. Since 2001, FirstLight has obtained six temporary amendments from FERC to utilize additional upper reservoir storage that the Northfield Mountain Project was designed to provide during ISO-NE declared emergencies. In FERC's 2017 temporary amendment, FERC's Environmental Review assessed the environmental, recreational, and cultural resources in the Northfield Mountain area and concluded that the additional operating flexibility sought by the temporary amendment was not expected to have any significant impact on those resources.

Specifically, the Environmental Review evaluated upper reservoir elevations, Turners Falls Impoundment elevations, and flows below Cabot Station. It concluded that the timing, rate, magnitude, and frequency of water elevation fluctuations in the upper reservoir and Turners Falls Impoundment were not materially different under the proposed temporary amendment compared to baseline conditions. The Environmental Review similarly concluded that the timing, rate, magnitude, and frequency of the flow regime on the Connecticut River below Turners Falls Dam and below Cabot Station also would not be materially different under the proposed temporary amendment compared to baseline conditions. Given these minor differences, the Environmental Review found that there was no significant impact on water quality, fish, plants, wildlife, endangered species, and erosion. Additionally, FirstLight conducted monitoring during the 2014, 2015, and 2017 temporary amendment periods, and found no significant impacts.

The FERC ruling, however, was limited to the temporary nature of the amendment. It stated: "However, as we concluded in the 2015 Amendment Order, it continues to be difficult to determine based on the available information to what extent unrestricted modifications to project operations occurring over a succession of winters during the relicensing proceeding, could affect existing erosion, bank stability, or water quality."

In response to MassDEP's August 15, 2024, information request 4, FirstLight provided the two operations curves discussed above and submitted at Appendix B: Existing Exceedance Curves and Future Exceedance Curves. *See* Appendix B. As discussed above, the Future Exceedance Curves demonstrate that forecasted operations will not vary significantly from the current operations model. Given the above, and the necessity of including the limitations on TFI surface elevations in Special Condition 10 and the Erosion Mitigation, Stabilization, and Monitoring plan required by Special Condition 25, MassDEP finds that the terms of Special Condition 13, proposed Article B100, are necessary to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards at 314 CMR 4.00, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 13, proposed Article B100.

D. Fish Passage, Turners Falls Project

Proposed fish passage enhancements include but are not limited to the following²⁸:

- FirstLight will install a new fish lift at the Turners Falls Dam, where the significantly higher

²⁸ USFW, Comments and Recommendation, pp. 4-5.

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bypass flows will attract migratory fish to the new fish lift entrance.

- FirstLight will also install temporary American eel passage structures while studying their placement and effectiveness before eventually installing permanent structures.
- FirstLight has proposed several measures for downstream passage including a barrier net around the Northfield Mountain Project intake/tailrace to prevent fish entrainment; a plunge pool below a portion of the Turners Falls Dam (Bascule Gate 1) to decrease injury and mortality of fish passing downstream over the spillway; an exclusion bar rack at Station No. 1; and upgrades to the Cabot Station downstream fish passage structure and facility to decrease entrainment.
- FirstLight will develop and implement studies to test the effectiveness of newly modified/constructed fish passage facilities based upon the identified performance standards.

- FirstLight will employ adaptive management measures to be used as necessary at newly installed or modified passage facilities.
- The schedule for installation of certain fish passage measures is summarized in Table 3 below adjacent to what was proposed in the Amended Final License Application (AFLA) for comparative purposes:

Table 3.

Project Measure Operational Year

AFLA FFP Agreement &

WQC Application

Cabot Tailrace Ultrasound Array 6 AMMA
 Replace Spillway Ladder with new Lift 6 9
 Provide Interim Upstream Eel Passage 2 1
 Permanent Upstream Eel Passage Facility 10 13
 Retire Cabot Fish Ladder 5 11
 Retire Entrance Portions of Gatehouse
 Ladder in canal 5 11

Turners

Falls

Construct a Plunge Pool below Bascule Gate No. 1
 located at the Turners Falls Dam 6 9
 Construct a Bar Rack at the entrance to the
 Station No. 1 Forebay 8 4
 Rehabilitate Gatehouse Trapping Facility - 9
 Improve Cabot Station Downstream Fish
 Passage System

B

- 4

NMPS Install Barrier Net at Lower Reservoir

Intake/Tailrace 5 7

A

B

– Adaptive management measure, if needed.

– Depending on what quarter the license is issued, this measure may occur in Year 5.

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Some commenters have asserted that installation of certain fish passage measures will not occur until passage of an unnecessarily long time. As shown in the table above, the first measures to be employed – construction of a bar rack at Station No. 1 and improvements to the Cabot Station downstream fish passage system – will not be in operation until 4 and possibly 5 years after issuance of the license. The Northfield barrier net is not scheduled to be operational until 7 years after license issuance. In addition, other commenters oppose installation of downstream passage measures before upstream, arguing for the converse or at least simultaneous installation.

The DOI preliminarily approved the implementation schedule.²⁹ The timing of implementation was based upon extensive studies to determine a methodology that would lead to the highest fish passage and survival rates. The decision to prioritize the implementation of downstream passage enhancements at Cabot Station was based on shad population modeling. Prioritizing downstream passage ahead of upstream passage will help to ensure that the large numbers of adult shad that will be passed upstream of Turners Falls after the new Spillway Lift becomes operational will have safe, timely, and effective downstream passage through the Projects.

³⁰

The upstream and downstream fish passages present difficulties for *concurrent* installation, primarily because of the complexity of the dam operations. In sum, some areas may only feasibly be worked on at

a certain time due to the need for dewatering and diverting the water to other areas, precluding work in those other areas where the water is diverted.

³¹

Further, after installation of the downstream passage several effectiveness studies will have to be conducted to ensure performance measures are being met, which may also result in implementation of adaptive management measures to increase or ensure effectiveness. This process will also consume additional time before the downstream passage can be fully installed. As the DOI stated, however, this is a necessary staging and sequence of implementation.

One commenter, the Connecticut River Conservancy, included the Affidavit of Edwin T. Zapel. Mr. Zapel is a Senior Hydraulic Engineer for Northwest Hydraulic Consultants based in Seattle, Washington. MassDEP has considered Mr. Zapel's affidavit and consulted with MassDEP's subject matter experts in this field. Mr. Zapel and others contend that USFWS, NMFS, MassWildlife, and the other signatories to the FFP Agreement wrongly prioritized installation of downstream fish passage before upstream passage, as discussed above. He also contends that the downstream and upstream fish passages should be installed simultaneously and that sequencing of the two projects is not necessary. Last, Mr. Zapel contends that sequencing downstream passage before upstream does not make sense for the American Shad. He asserts that the shad's proclivity for rapid colonization, significant fecundity, and the lack of natal homing favor prioritization of the upstream passage. He believes that prioritizing downstream passage is not supported by the biology and behavior of the shad population.

Mr. Zapel did not discuss what background he has with the American Shad, in contrast with his experience with Pacific Salmon in the northwest where he is based, a quite different species that dies

²⁹ DOI, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 30.

³⁰ DOI, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 30.

³¹ DOI, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 31.

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after spawning. Mr. Zapel is a civil engineer, not a fish biologist.

In contrast to the Pacific Salmon, the *repeat* spawning portion of the population in iteroparous species like American Shad is very important. Shad will mature and return upstream to spawn for the first time at 4 or 5 years old (if they survive) and they will return again to spawn, perhaps several times over the following years. The number of eggs produced is related to body size, and repeat spawners are significantly larger than virgin females, making a significantly greater contribution to the total number of eggs produced. This is a compelling rationale to provide enhanced protection for post spawned American Shad during their downstream migration so that they survive the return to the ocean and have a chance to become repeat spawners.

The FFP Agreement and the WQC Application recognize this rationale and prioritize downstream passage construction over upstream passage to protect all adult American Shad that are introduced to waters above the Turners Falls Dam. Biologists from NMFS, USFWS, and MassWildlife were concerned with constructing improved upstream fish passage and allowing more shad to travel upstream only to then be forced to navigate an inadequate downstream fish passage system and incur unnecessary mortality.

Mr. Zapel argues that work on upstream passage and downstream passage could occur simultaneously rather than the staged approach taken in the Settlement Agreement. From a theoretical engineering standpoint this is possible, assuming all the resources are available to simultaneously design, permit, and construct several complex projects. However, when the parties, including the federal and state fish biologists, agreed to the timeline it represented a balance of many interests and tradeoffs, other than a focus solely on engineering capacity, that achieved substantial benefits for fish passage and habitat in other areas discussed previously. It was a compromise that those federal and state experts deemed worthwhile.

Mr. Zapel is also apparently unaware of project details for this specific site and facility that present complexities that will generally require more time. For example, he compares design and installation of the downstream fish passage to the installation of a trashrack project in Seattle at the City Light's

Diablo Dam project. For the Turners Falls Project, the downstream passage must be designed with finer spaced rack to pass enough water to satisfy the hydroelectric units without excessive head loss. It must also be constructed and installed for relatively easy cleaning, and it must have low water approach velocities so that fish are not impinged on the rack. Last, it must be designed with multiple openings with appropriate size and flow to successfully pass the target species. For this component alone, the environmental permitting will add at least 1 year.

While it would be ideal to install both the upstream and downstream passages simultaneously, that is not compelled by the status of the American Shad population. The Connecticut River American Shad population is robust and self-sustaining, which provides some latitude in the construction timing. While it is true that passage at the Turners Falls Dam has been a bottleneck in the system relative to the other hydro projects, getting the passage designs and locations correctly installed and operational so that safe and effective passage is assured is more important than an expedited schedule of implementation. As long as the design, construction, and effectiveness testing process move forward diligently at a reasonable pace such that the design considerations are well thought out (including options for timely adaptation if performance criteria are not met), a process that takes several years to a decade is not

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unreasonable.

For all the above reasons, MassDEP concurs with the USFWS and NMFS comments, recommendations, and preliminary prescriptions for the prioritization and implementation schedule for the Turners Falls Project fish passage measures. MassDEP therefore finds that the terms of Special Conditions 14-19, proposed Article A300-A350, are necessary to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition Nos. 14-19, proposed Article A300-350.

1. Shortnose Sturgeon

Some commenters inquired about the Connecticut River Conservancy using environmental DNA (eDNA) techniques to survey for Shortnose Sturgeon presence upstream of the Turners Falls Dam, all the way to the Bellows Falls dam in Vermont. They questioned how this might impact the WQC. Construction of the Turners Falls Dam was completed in 1798 and built on a natural falls-rapids. Turners Falls is considered to be the historic upstream boundary of Shortnose Sturgeon in the Connecticut River.

Shortnose Sturgeon are a federally listed endangered species as well as state listed in Massachusetts and New Hampshire. The eDNA study area encompassed approximately 45 to 50 additional miles north of the established existing Shortnose Sturgeon habitat areas below the Turners Falls Dam. The study was done in June and July of 2024 at four sampling locations, three in between the Turners Falls and Vernon dams, and one in between the Vernon and Bellows Falls dams. According to Connecticut River Conservancy, the data indicated positive “hits” for Shortnose Sturgeon eDNA (a positive “hit” is indicative of Shortnose Sturgeon DNA in the water sample taken at that location) and thus the presence of Shortnose Sturgeon in the river upstream of the sampling location. There have also been anecdotal sightings and one verified sighting of Shortnose Sturgeon north of the Turners Falls Dam as far back as 2017.

MassDEP consulted with MassWildlife and NMFS. After consultations with the Natural Heritage and Endangered Species Program, MassWildlife opined that FirstLight’s proposed operations would support Shortnose Sturgeon habit and fish passage. MassDEP concurs with MassWildlife’s assessment. All the evidence to date suggests a very small number of adult Shortnose Sturgeon above the Turners Falls Dam. The historical pictures and descriptions are of adult fish only, and the eDNA data are consistent with very low numbers of individuals being present. There is no evidence of spawning above the Turners Falls Dam. There is not enough information to support any determinations of whether there is a self-sustaining population(s) in the upper Connecticut or if any spawning occurs. The only known successful spawning area is below the Turners Falls Dam, at the lower end of the bypass reach, just

20. Seldon Gary

January 27, 2025 at 1:52:45 PM

Given that "... any Shortnose Sturgeon ... are protected by both state and federal endangered species acts ..." how does/will DEP protect a Shortnose Sturgeon at the NMPS intake from being ground up, either now under the automatic annual license renewals, or with the proposed WQC under a new

upstream of Cabot station.³² There is also evidence of spawning just below the Holyoke Dam and in Connecticut. Targeted sampling by the USGS Conte Lab and other eDNA studies upstream of the Turners Falls Dam have not resulted in the detection of any Shortnose Sturgeon between Turners Falls

³² DOC, Preliminary Prescription, p. 20.

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and Bellows Falls.³³

Although none have been observed, it is possible that any Shortnose Sturgeon above the Turners Falls Dam have passed through the Turners Falls fishways during their 40 years of operation- particularly during the last 20 years when the fishways have been left open 24 hours a day. This situation would allow Shortnose Sturgeon to pass undetected at night, during periods of low visibility (turbidity), or while the cameras used to record passage were not functioning due to power outages or mechanical failure. It is also possible that someone caught one or more Shortnose Sturgeon at the known area of concentration below the Sunderland bridge and released them in the river above Turners Falls.³⁴

20 Regardless of how they arrived, any Shortnose Sturgeon above the Turners Falls Dam are protected by both state and federal endangered species acts. MassWildlife determined that while the FirstLight facility could possibly affect Shortnose Sturgeon above the dam, the overall Connecticut River population of Shortnose Sturgeon would continue unaffected.

The proposed flow measures below the Turners Falls Dam are specific operational measures for the purpose of protecting Shortnose Sturgeon and American Shad. The required minimum and stabilized flows will increase considerably the amount of Shortnose Sturgeon and American Shad spawning habitat and rearing/development of Shortnose Sturgeon eggs and larvae that is available below the Projects. The minimum flows also increase the amount of contiguous suitable habitat that would persist under a range of generation conditions.³⁵

These agreed upon minimum flow requirements are essential to support the survival and recovery of the species in the Connecticut River, are consistent with the requirements of Sections 7(a)(1) and 7(a)(2) of the ESA, and address Recovery Criteria 3.1.1 and 3.1.2 in NMFS Recovery Plan for Shortnose Sturgeon (NMFS 1998).³⁶

Despite the above improvements for minimum flows below the dam throughout the bypass reach, particularly below Station No. 1, some commenters have expressed concern about Shortnose Sturgeon sitings just below the dam in the bypass reach. Their concern arises out of a recent siting of what was believed to be a Shortnose Sturgeon stranded in a pool after high flow conditions abated. These commenters believe that flows should be increased to avoid this problem. MassWildlife, however, has opined that fish strandings in isolated pools below the dam occur from natural or unnatural high flow events where fish swim upstream and then as flows decrease, whether naturally or unnaturally, they are stranded in isolated pools until the next high flow event.

MassDEP understands that the National Marine Fisheries Service is reevaluating the proposed fish passage protections required in relicensing in light of the above, but it is highly likely that the proposed measures will be found to be, or will be designed during the design phases to be protective for

Shortnose Sturgeon for these reasons:

³³ DOC, Preliminary Prescription, p. 20.

³⁴ DOC, Preliminary Prescription, p. 20.

³⁵ DOC, Preliminary Prescription, p. 35-36.

³⁶ DOC, Preliminary Prescription, p. 35-36.

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- Turners Falls Dam: The plunge pool proposed for downstream passage protection of fish that go over the dam will provide protection for Shortnose Sturgeon. This passage measure has not yet been designed and Shortnose Sturgeon concerns must be included.

- Cabot Station: The downstream passage system proposed (2-inch clear space, full depth, with openings at the bottom) is exactly what was designed and installed at the Holyoke dam to protect and pass adult and juvenile Shortnose Sturgeon. The rack has not yet been designed and Shortnose Sturgeon concerns must be included.

- Station No. 1: The $\frac{3}{4}$ clear space rack proposed at the power canal wall/Station No. 1 forebay is effectively a fish exclusion rack that will likely keep any Shortnose Sturgeon out of Station No. 1. This rack, however, must be modified if necessary.
- Northfield Mountain Pumped Storage: The barrier net proposed for fish passage protection will have a mesh size small enough to provide protection for Shortnose Sturgeon. Again, however, the net and related structural equipment have not yet been designed and Shortnose Sturgeon concerns can and must be included.

If correctly designed and operated, the upstream and downstream fish passage systems at Turners Falls could be a substantial gain for the Connecticut River Shortnose Sturgeon population, opening miles of previously blocked habitat.

E. Fish Passage, Northfield Mountain

1. Northfield Barrier Net Operational Year

Some commenters have asserted that the Northfield barrier net should become operational earlier than year 7, as presently scheduled. DOI approved the schedule for installation of the net, stating it will allow for implementation to occur between installation of downstream and upstream fish passage measures at Turners Falls.³⁷ The DOI explained that this will allow for protection from entrainment in advance of the much larger numbers of shad that will be passed upstream once the new upstream passage is operational.

FirstLight submitted a Gantt chart to MassDEP showing a schedule for design, permitting, agency consultation, construction, and installation, of the net, which will consume 5 years. Consequently, FirstLight maintains the net cannot be operational until year 7, as agreed to in the FFP Agreement. MassDEP concludes for several reasons that there is an insufficient basis for FirstLight to wait until year 7 for the barrier net to be operational. First, because the barrier net is physically separate from and not related to the upstream and downstream fish passage facilities, it is not necessary to install the net between the times for installation of the downstream and upstream fish passage measures at Turner Falls, contrary to DOI's statement above. Second, FirstLight had previously proposed in its Amended

³⁷ U.S. Department of the Interior, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 33.

Final License Application for the net to be operational by year 5, countering their more recent assertions that earlier installation is not feasible.

Third, MassDEP is persuaded by the Affidavit of Edwin T. Zapel, which the Connecticut River Conservancy included with its comments in this proceeding. Mr. Zapel stated that the net could be designed within one year and implemented within the following two years. His position was based upon his experience in an apparently more complex situation involving a hydropower facility in Washington state. In that case, barrier nets were installed much deeper, to more than 200 feet, and in a reservoir that experiences wider fluctuations in water levels, one of the most problematic design issues. The nets were designed within about two years of license issuance and installed the following year. Fourth, as discussed below, there is evidence of Shortnose Sturgeon in between the Vernon Dam in Vermont and the Turners Falls Dam, possibly in proximity to the Northfield intake structure where the barrier net is designed to prevent entrainment.

For all the above reasons, MassDEP has determined that the barrier net shall be operational by June 1 of year 5 following licensure. Thus, it is necessary to amend Proposed Articles B200-220, which are reflected as Special Conditions 20-22, with respect to the operational year and effectiveness testing to be implemented. MassDEP finds Special Conditions 20-22 are necessary to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Conditions 20-22.

2. Northfield Barrier Net Annual Operational Period

Some commenters asserted that the barrier net should be installed earlier in the year than June 1 to

maximize the net's protections against entrainment. There are, however, a number of reasons why installation of the barrier net no later than June 1 of each year is appropriate. First, high spring flows with substantial debris will make it difficult and unsafe to install the net earlier. Even if there is a narrow window of low flow to install it, subsequent high flow events before June 1 present an undue risk of damage to the net. Also, the DOI explained that peak spawning does not generally occur until mid-May to mid-June. Thus, adult shad will not be outmigrating until approximately June, "which aligns with the specified operational period for the barrier net."³⁸

The DOI noted that "that Condition 10 of this prescription allows for modifying operational periods, based on new information and after consultation with FirstLight. Should migration timing shift due to changing air and water temperatures, or results of effectiveness studies scheduled to take place in Years 10 and 11 indicate barrier net deployment should occur earlier than June 1, the [DOI] would consult with FirstLight and determine whether the new information necessitates modifying the operational period for the NMPS barrier net." The applicable language from DOI's Condition 10 was also included in Proposed Article 230, which is Special Condition 23 below. It states: "Future Refinement of the timing may be made by the MADFW, NMFS, and USFWS based on new information and after consultation with the Licensee."

³⁸ U.S. Department of the Interior, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 35.

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3. Barrier Net Effectiveness

Several commenters also questioned the effectiveness of the barrier net. The DOI explained that it considers the barrier net to be the most effective means of preventing entrainment, pointing to studies of barrier nets: "A barrier net has been in place at the Ludington Pumped Storage Project (LPSP, FERC No. 2680) since 1989. As part of the subsequent license proceeding for LPSP, a phased study was undertaken to identify entrainment abatement and engineering alternatives and assess the feasibility of identified entrainment abatement technologies and engineering alternatives (FERC Accession 20151202- 5217). That study report provides a comprehensive review of barrier net installations throughout the country and a summary of their effectiveness. At all evaluated sites, barrier nets met specified entrainment reduction standards (which varied by site). Based on the findings, the barrier net was carried forward to the detailed feasibility assessment (FERC Accession 20151202-5217)."³⁹

The DOI also noted that the barrier net will be required to achieve certain performance standards. These studies will help to ensure effectiveness of the net and reduction in entrainment of juvenile and adult alosines and adult eels.

Other commenters point out that the barrier net is only effective with respect to fish and does not prevent entrainment of fish eggs and larvae. They believe that FirstLight should install what is known as an aquatic filter barrier (AFB). The DOI explained why this alternative is not feasible for this project: "To date, this technology has only been deployed at cooling water intake structures. The LPSP study assessed AFB technology and determined it should be carried forward to the detailed feasibility assessment; however, it was not considered for further evaluation, given the required size (estimated at 15-miles-long), anticipated bio-fouling and debris issues, visual and recreational impacts, and permitting issues (FERC Accession 20151202-5217). Many of these issues are potential concerns at Northfield also. Based on the stated design flow for an AFB of 0.02 fps (FERC Accession 20151202-5217), a conservative average Connecticut River depth of 20 feet, and a maximum NMPS discharge of 20,000 cfs, the calculated length of AFB required would be 9.5 miles long."⁴⁰

The DOI elaborated on the problem of the barrier net not being able to prevent the entrainment of eggs and larvae. The DOI stated that "in order to compensate for the unavoidable loss" of eggs and larvae FirstLight will fund compensatory management efforts intended to offset the loss of adult equivalents."⁴¹ The FFP Settlement Agreement requires an off-license Ichthyoplankton Mitigation Fund to offset the potential loss of ichthyoplankton (shad eggs and larvae) through entrainment at the Northfield Mountain Project. The agreement requires that FirstLight will make the payments to the

USFWS or its designee, which will select and carry out the projects and activities. FirstLight's total contributions will be \$1,296,281 over the 50-year license term.

MassDEP concurs that the barrier net is the most effective technology to date, if properly installed and implemented with sufficient adaptive management measures (AMMs). For all the above reasons, except

³⁹ U.S. Department of the Interior, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 33.

⁴⁰ U.S. Department of the Interior, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 33-34.

⁴¹ U.S. Department of the Interior, Preliminary Prescription for Fishways Pursuant to Section 18 of the Federal Power Act, p. 35.

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as otherwise noted above concerning the operation year for the barrier net, MassDEP concurs with USFWS and NMFS comments, recommendations, and preliminary prescriptions for the prioritization and implementation schedule for the Northfield Mount Project fish passage measures. MassDEP therefore finds that the terms of Special Conditions 20-24, proposed Article B200-B240, are necessary to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition Nos. 20-24, proposed Article B200-B240.

F. Turners Falls Impoundment Erosion and Impairments

Since the Northfield pumped storage facility began operating in the early 1970s erosion and its causes in the TFI have been studied extensively, beginning in 1979.⁴² This is likely because the facility licensee is generally only responsible for addressing erosion caused by project operations, and not erosion caused by natural phenomena, such as flood and high flows, run-off, and wind-driven wave action.⁴³

As discussed previously, in 1998, MassDEP identified Impairments at Assessment Units MA34-01 and -02, for Alteration in Stream-side or Littoral Vegetative Covers/Flow Regime Modification. The causes for both impairments are associated with project operations and described as "Streambank Modifications/Destabilization."

Several commenters have expressed concern with erosion in the TFI, requesting that FirstLight be required to implement stabilization, mitigation, and monitoring measures for the term of the FERC license.

Erosion is typically a natural riverine process that redistributes sediment and nutrients throughout the ecosystem and associated flow path. As part of that process, erosion can create various landforms including riverine valleys and fertile floodplains. Naturally occurring erosion does not always result in the degradation of water quality and can be attributed to natural and necessary geomorphological processes.

Natural erosion, however, can be accelerated by anthropogenic influences such as land use, hydropower operations, and various other activities that disrupt stability and equilibrium. Distinguishing between natural and anthropogenically influenced erosion is critical to understanding the responsibility of FirstLight for erosion within the TFI.

Erosion, if substantial, has the ability to contribute to impairments of existing and designated uses by:

- Increasing turbidity and suspended solids;
- Impairing streamside vegetation and associated habitat;

⁴² See e.g., U.S. Army Corps of Engineers (USACE). 1979. Connecticut River Streambank Erosion Study: Massachusetts, New Hampshire, and Vermont. Prepared by Simons, D.B., Andrew, J.W., Li, R.M., and Alawady, M.A. Waltham, MA: USACE.

⁴³ Bangor Hydro Electric Company 83 FERC ¶ 61,037, at 61,090 (1998); Duke Power Company, 33 FERC ¶ 61,321 (1985). In addition, the baseline for analysis must be based upon the dam being present, i.e., instead of including a baseline that assumes the dam does not exist. See e.g., *American Rivers v. FERC*, 201 F.3d 1186 (9th Cir. 2000).

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- Degrading the physical composition of the bottom of the waterbody; and
- Preventing recreational use of the waterbody, docks, and boat launches due to sedimentation.

In general, hydropower operations contribute to erosion by raising and lowering the water surface elevation more frequently and significantly than natural fluctuations. The ACOE concluded that repeated raising and lowering of water elevation (pool fluctuations) in the TFI can cause an increase in instability on the order of 18% of the shear stress exerted on the bank by the flowing water.⁴⁴ The ACOE also added, however, that an impounded section of a river may theoretically reduce erosion that might otherwise occur during natural, unimpounded conditions. The natural river (*i.e.*, non-dammed sections of the Connecticut River) is approximately 1.34 times more susceptible to major bank erosion. In contrast, another evaluation of erosion in the TFI determined that the ACOE's conclusion that pool fluctuations are responsible for 18% of the erosive forces underreported the amount that pool fluctuations in the TFI affect erosion.⁴⁵

Overall, water surface fluctuations can be the second highest cause of erosion following naturally caused shear stress (velocity) from river flows, with smaller contributions from boat waves, gravitational forces, seepage, natural stage variations, wind-induced waves, ice, flood variations, and freeze-thaw.⁴⁶ The USACE concluded that the "impacts of hydropower development on bank stability in [the TFI] have been and continue to be more severe than for the other pools. The increase in pool level, the larger pool fluctuations and flow reversals caused by the present hydropower operation all contribute to the documented bank instabilities."⁴⁷ Pool fluctuations on the order of 5 feet are at least twice as destructive to banks as pool fluctuations of about 1-3 feet experienced in the other hydropower pools."⁴⁸

Linking water surface fluctuations to erosional processes has been demonstrated in numerous studies. The potential contribution to existing erosion rates in some locations was an increase of 28 to 30% following hydropower operation simulations.⁴⁹ Additionally, other research shows that the level or range of fluctuations contribute to how long it takes for the impoundment to stabilize following dam construction as assessed through various geomorphological processes.⁵⁰

⁴⁴ U.S. Army Corps of Engineers (USACE). 1979. Connecticut River Streambank Erosion Study: Massachusetts, New Hampshire, and Vermont. Prepared by Simons, D.B., Andrew, J.W., Li, R.M., and Alawady, M.A. Waltham, MA: USACE.

⁴⁵ Field, John, PhD. "Detailed Analysis of the 2008 Full River Reconnaissance of the Turners Falls Pool on the Connecticut River, Prepared for Landowners and Concerned Citizens for License Compliance Turners Falls Pool," Field Geology Services (Farmington, ME, 2011).

⁴⁶ U.S. Army Corps of Engineers (USACE). 1979. Connecticut River Streambank Erosion Study: Massachusetts, New Hampshire, and Vermont. Prepared by Simons, D.B., Andrew, J.W., Li, R.M., and Alawady, M.A. Waltham, MA: USACE.

⁴⁷ U.S. Army Corps of Engineers (USACE). 1979. Connecticut River Streambank Erosion Study: Massachusetts, New Hampshire, and Vermont. Prepared by Simons, D.B., Andrew, J.W., Li, R.M., and Alawady, M.A. Waltham, MA: USACE.

⁴⁸ U.S. Army Corps of Engineers (USACE). 1979. Connecticut River Streambank Erosion Study: Massachusetts, New Hampshire, and Vermont. Prepared by Simons, D.B., Andrew, J.W., Li, R.M., and Alawady, M.A. Waltham, MA: USACE.

⁴⁹ Saint-Laurent, D., Touileb, B. N., Saucet, J. P., Whalen, A., Gagnon, B., & Nzakimuena, T. (2001). Effects of simulated water level management on shore erosion rates. Case study: Baskatong Reservoir, Québec, Canada. Canadian Journal of Civil Engineering.

⁵⁰ Kaczmarek, H., Mazaeva, O. A., Kozyreva, E. A., Babicheva, V. A., Tyszkowski, S., Rybchenko, E. A., Brykata, D., Bartczak, A., & Słowiński, M. (2016). Impact of large water level fluctuations on geomorphological processes and their interactions in the shore zone of a dam reservoir. Journal of Great Lakes Research, 42(5), 926-941.

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Examining the historical context of erosion within the TFI can provide necessary reference information when assessing the various causes of erosion. In a report titled *Riverbank Erosion on the Connecticut River at Gill, Massachusetts: its Causes and its Timings*⁵¹, J.B. Reid compares the TFI from the 1800s to present day to develop an understanding of how specific locations have changed over time. Reid acknowledged the limitations of his methodology and comparing historical datasets but concluded that erosion had been occurring in numerous locations within the TFI long before the current Turner's Falls Dam elevation was raised in 1970 and Northfield Mountain Pumped Storage operations commenced. The WQC Application and related FERC-relicensing studies also contribute to understanding hydropower-induced erosion. FirstLight conducted multiple iterations of the Bank Stability and Toe Erosion Model (BSTEM) to assess the project's existing contribution to erosion under the existing licenses⁵² and the proposed contribution to erosion associated with the operations proposed for relicensing.⁵³

21. Seldon Gary

February 18, 2025 at 3:28:28 PM

Here again, DEP argues it must COMPLY with the SWQS.

Always COMPLY with the SWQS in this Certificate!

Based on the modelled results, FirstLight assessed the causes of erosion and divided the results into dominant causes and contributing causes. The possible causes of erosion included high flows, moderate flows, boat waves, and project operations. For a cause to be considered dominant at a site, the cause had to be responsible for at least 50% of bank erosion. For a cause to be considered a contributing cause of erosion at a site, the cause had to contribute more than 5% but less than 50% of the erosion. The simulated results showed that high flows were the dominant cause of erosion for approximately 37.1 miles of the shoreline (86% of the entire TFI), while boat waves were the dominant cause for the remaining 5.9 miles (14% of the entire TFI). Boats were a contributing cause of erosion for 8.0 miles of shoreline (19% of the entire TFI), while moderate flows were a contributing cause for 4.4 miles (10% of the entire TFI) and project operations were a contributing cause for 7.7 miles (18% of the entire TFI). These percentages reflect the entire TFI, some of which is located north of Massachusetts in New Hampshire and Vermont. The sections and lengths of river where project operations are projected to contribute to erosion within Massachusetts is 21,600 linear feet of bank between Barton Cove and French King Gorge and 4,700 linear feet of bank on river right upstream of the Northfield Project's tailrace.

MassDEP's review of the WQC Application also considered the various peer reviews⁵⁴ of FirstLight's erosion findings and the BSTEM methodology. These peer reviews discussed limitations of: the BSTEM methodology, the experiment and study design, documentation of the model inputs; and the results and interpretation of the results, all raising questions about the accuracy of the BSTEM results and interpretations.

⁵¹ Reid, J.B. (1990). Riverbank Erosion on the Connecticut River at Gill, Massachusetts: its Causes and its Timing. Hampshire College. Unpublished report.

⁵² FirstLight. (2016). FirstLight Relicensing Study 3.1.2: Northfield Mountain / Turners Falls Operations Impact on Existing Erosion and Potential Bank Instability Study Report.

⁵³ FirstLight. (2024). Supplemental BSTEM Modeling Report Reflecting Operating Conditions in the Flows and Fish Passage Settlement Agreement.

⁵⁴ Dethier, Evan. (2024). Review of Erosion in the Turners Falls Impoundment. <https://www.mass.gov/doc/firstlight-power-401-wqc-public-comments-crc-attachments/download>. p. 267 – 319; Inter-FLUve. (2024). Technical Memorandum: Review of the BSTEM Modeling and Reporting. <https://www.mass.gov/doc/massdeps-consultant-review-of-firstlights-supplemental-bstem-modeling-report/download>; Princeton Hydro (2016). Peer Review of Relicensing Study 3.1.2 Northfield Mountain/Turners Falls Operations Impact on Existing Erosion and Potential Instability Study Report

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In light of all the above, it is clear that project operations will continue to contribute to erosion in the TFI. It is very difficult, however, to quantify the extent of that contribution. It is therefore necessary to establish erosion-related measures in the WQC to address the existing impairments and to ensure compliance with the SWQS. The measures are intended to balance the limitations and difficulties of precisely determining erosion causation in the TFI with the need to address existing erosion and impairments and monitor for and address any future erosion. The SWQS require that the existing and designated uses and the necessary water quality be maintained and protected and that they be free from solids, color, and turbidity that would be aesthetically objectionable, impair any use, or impair the benthic biota or degrade the chemical composition of the bottom. See 314 CMR 4.04.

The measures are also intended to build upon the substantial erosion related mitigation, stabilization, and restoration work that has been done to date. Bank stabilization work throughout the TFI began in the early 1970s, shortly after the construction of the Northfield Mountain Project. Over 5 miles of bank were stabilized, using rip-rap or rip-rap with vegetation and grading and planting. An additional 2,000 feet of experimental stabilization was also constructed by the United States Army Corps of Engineers (USACE) in the 1970s.

In 1999, FirstLight's predecessor developed the Erosion Control Plan (ECP), identifying 20 severely eroded shoreline sites requiring stabilization. Based on the ECP, FirstLight (or its predecessors) stabilized nearly 5 miles of banks throughout the TFI, most of which were in Massachusetts.

In 2013, FirstLight conducted relicensing Study 3.1.1, 2013 Full River Reconnaissance (2013 FRR) to identify and define riverbank features and characteristics as well as the types, stages, indicators, and

21

extent of erosion throughout the TFI. The 2013 FRR culminated in the identification of 10 TFI bank segments, approximately 855 linear feet, where stabilization or preventative maintenance projects were needed. FirstLight completed the proposed stabilization/preventative maintenance work on the 10 bank segments identified during the study.

For almost three decades, the Franklin Regional Council of Governments (FRCOG) and its predecessor (the Franklin County Commission) and its Connecticut River Streambank Erosion Committee developed and implemented bioengineering bank stabilization projects pursuant to the ECP. FRCOG secured over \$900,000 in federal funds and MassDEP funds from the Federal Clean Water Act, § 319 grants, to stabilize over 3,000 feet of shoreline.⁵⁵

In total, approximately 10.5 miles of riverbank have been stabilized in the TFI by either FirstLight, its predecessor, or other groups. This equals approximately 32% of all TFI banks in Massachusetts.

For all the above reasons, MassDEP finds it necessary to impose the erosion-related measures in Special Condition 25 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 25.

⁵⁵ Grant funds include those from the EPA Targeted Watershed Grant WS-97122001-0; and three from MassDEP's Section 319 grant program 96-03/319, 00-04/319 and 03-07/319.

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G. Water Quality Monitoring

As discussed above, dams and hydropower facilities typically alter river flow and elevations (as is the case with the FirstLight Projects), potentially causing an array of adverse impacts on water quality, including alterations of water temperature, chemistry, and aquatic life. In fact, as discussed above, the TFI has a number of impairments related to water quality and aquatic life, including non-native aquatic plants (Curly-leaf Pondweed, Eurasian Water Milfoil, Fanwort, and Water Chestnut); flow regime modification; alteration in stream-side littoral vegetation, dewatering, and total suspended solids.

Although it is possible that in a particular point in time the chemistry and health of a river may appear satisfactory, adverse impacts can develop over time, particularly from climate change. It is therefore important to require long-term monitoring for the life of the license to better understand the data and any long-term trends. This facilitates being able to respond in a timely manner rather than waiting until a potential problem fully develops.

For all the above reasons, MassDEP finds it necessary to include Special Condition 26 for the projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 26, which specifies water quality monitoring requirements for the life of the license.

H. Invasive Plant Species Management Plan

FirstLight has proposed identical Invasive Plant Species Management Plans (IPSMPs) for the Turners Falls and Northfield Projects. The stated purpose of the plans is to prevent the introduction and/or spread of invasive species within the project boundaries through implementation of best management practices and supporting the education of those performing construction, maintenance, and/or operational activities within the project boundaries (WQC Application, Appendices B and C).

On May 20, 2024, MassWildlife filed comments with FERC regarding the IPSMPs ("MassWildlife Comments").

⁵⁶ MassWildlife summarized the results of FirstLight's invasive plant study with respect to the TFI: Surveys documented five invasive submerged aquatic vegetation (SAV) species within the TFI including fanwort (*Cabomba caroliniana*), Eurasian milfoil (*Myriophyllum spicatum*), variable leaf milfoil (*Myriophyllum heterophyllum*), curly-leaved pondweed (*Potamogeton crispus*), and water chestnut (*Trapa natans*). These invasive SAV beds are most common within the lower portion of the TFI, particularly Barton Cove. As noted in the study report relied upon by MassWildlife, the presence of these species may ultimately degrade available habitat for fish and wildlife.⁵⁷

Both MassWildlife and USFWS concurred in their assessments of the IPSMPs. They generally support

the protection measures in Section 3 of the IPSMPs of the plans as they relate to preventing future establishment or spreading of invasive plant species when performing routine maintenance, construction, or major maintenance activities but recommended adding the following additional measure to the IPSMPs: “Based on post-activity vegetation surveys, if invasive species have been found

⁵⁶ DFW COMMENTS, RECOMMENDATIONS, TERMS AND CONDITIONS, Application Ready for Environmental

Analysis, Turners Falls Hydroelectric Project, FERC No. 1889-085; Northfield Mountain Pumped Storage Project, FERC

Number 2485-071, p. 5.

⁵⁷ MassWildlife Comments, p. 5.

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to outcompete desirable vegetation during reestablishment, the Licensee will treat infestations, as necessary, to eliminate or reduce the invasive infestation(s).”⁵⁸

MassWildlife also summarized the invasive plant studies as showing 41 of the 107 SAV beds had some level of invasive species infestation, with the majority occurring immediately upstream of the Turners Falls Dam (*i.e.*, Barton Cove). Since issuance of MassDEP’s 2018/2020 Integrated List of Waters, water chestnut has become established in the lower portion of the Turners Falls power canal.

⁵⁹ Water chestnut forms dense mats that displace native species and interfere with recreational activities. The dense mats of vegetation shade out native aquatic plants that provide food and shelter to native fish, waterfowl, and insects; and decomposition of these dense mats reduces dissolved oxygen levels and may kill fish. Because it is an annual plant, it can be effectively controlled if seed formation is prevented, through manual, mechanical, or chemical methods.

⁶⁰ Given the above, particularly that the invasive plants presently persist in these areas and the seed bank could be viable for up to 12 years, and the absence of applicable measures in the IPSMP, MassWildlife and USFWS recommended, pursuant to Section 10(j), that FirstLight undertake annual water chestnut removal within the lower TFI (Barton Cove) and canal.

Both MassWildlife and USFWS concurred that the highly invasive Hydrilla (*Hydrilla verticillata*) presents a significant concern for future infestation, particularly in backwater or low velocity areas, such as those used for boat launches. MassWildlife found, consistent with the USFWS, that without vigilant monitoring, hydrilla could quickly become established in Barton Cove and other low velocity areas within the TFI. Controlling or eradicating established beds could be difficult, given the number of sensitive plant and invertebrate species that inhabit the TFI. “Therefore it is imperative that FirstLight include an early detection and rapid response program (EDRR) as part of its IPSMP.

”⁶¹

MassWildlife and USFW requested that FERC include in any new license issued for the projects the above recommendations, including an EDRR, pursuant to Section 10(j). MassDEP concurs with this request.

For all the above reasons, MassDEP finds it necessary to include Special Condition 27 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 27, which requires implementation of the Invasive Species Management Plan.

I. Riparian Management Plan

A riparian zone for a river is the area of land that runs along and parallel to the riverbank. Healthy riparian zones are often vegetated with native trees and plants that are allowed to grow undisturbed. Land adjacent to rivers and streams can protect the natural integrity of these waterbodies. The presence

⁵⁸ MassWildlife Comments, p. 6; USFW, p. 18.

⁵⁹ MassWildlife Comments, p. 6; USFW, p. 18.

⁶⁰ MassWildlife Comments, p. 6; USFW, p. 18.

⁶¹ MassWildlife Comments, p. 7; USFW, pp. 18-19.

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of natural vegetation within the riparian zone is critical to sustaining rivers as ecosystems. The riparian zone can prevent degradation of water quality by filtering sediments, toxic substances (such as heavy metals), and nutrients (such as phosphorus and nitrogen) from stormwater, nonpoint pollution sources,

and the river itself. Sediments are trapped by vegetation before reaching the river. Nutrients and toxic substances may be detained in plant root systems or broken down by soil bacteria.

Riparian zones can also trap and remove disease-causing bacteria that otherwise would reach rivers. Natural vegetation within the riparian zone also maintains water quality for fish and wildlife. Mature vegetation within riparian zones provides shade to moderate water temperatures and slow algal growth.⁶²

Riparian zones are critical to maintaining thriving fisheries. Maintaining vegetation along rivers promotes fish cover, increases food and oxygen availability, decreases sedimentation, and provides spawning habitat. Maintenance of water temperatures and depths is critical to many important fish species.⁶³

Riparian zones are important wildlife habitat, providing food, shelter, breeding, migratory, and overwintering areas. Even some predominantly upland species use and may be seasonally dependent on riparian zones. Riparian zones promote biological diversity by providing habitats for an unusually wide variety of upland and wetland species, including bald eagles, osprey, and kingfishers. Large dead trees provide nesting sites for bird species that typically use the same nest from year to year. Sandy areas along rivers may serve as nesting sites for turtles and water snakes.

Riparian zones provide food for species such as wood turtles which feed and nest in uplands but use rivers as resting and overwintering areas. Riparian zones also provide corridors for the migration of wildlife for feeding or breeding. Loss of this connective function, from activities that create barriers to wildlife movement within riparian zones, results in habitat fragmentation and causes declines in wildlife populations. Wildlife must also be able to move across riparian zones, between uplands and the river.⁶⁴ Reptiles, especially turtles, often require areas along rivers to lay their eggs. Since amphibians and reptiles are less mobile than mammals and birds, maintaining integrity of their habitat is critical.⁶⁵

For all the above reasons, MassDEP finds it necessary to include Special Condition 28 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 28 requiring a Riparian Management Plan.

J. Recreation

MassDEP finds that the Recreation Settlement Agreement is necessary to sustain and improve access for certain designated and existing uses in the Surface Water Quality Standards, including secondary

⁶² 310 CMR 10.58, Riverfront Area.

⁶³ 310 CMR 10.58, Riverfront Area.

⁶⁴ 310 CMR 10.58, Riverfront Area.

⁶⁵ 310 CMR 10.58, Riverfront Area.

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contact uses such as boating, fishing, swimming, and wading. To that end, MassDEP finds it necessary to include Special Condition 29 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 29 requiring implementation of the Recreation Management Plan dated May 2023.

K. Sediment Management Plan

The Northfield Project's withdrawal of water from the Connecticut River involves redistribution of sediment to the Northfield Reservoir where it accumulates. Careful management of that sediment and monitoring the Northfield tail race (as required in Special Condition No. 26) are necessary to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition 26 for monitoring and Special Condition No. 30 for management.

L. Consideration of Climate Change

NMFS found that the measures within its preliminary prescriptions provide American Shad and American Eel safe and timely access to climate resilient habitat upstream of the Project. It stated:

“Beyond the general information on model predictions for the Northeast U.S. and the Connecticut River watershed, fine scale predictions on how climate change will impact the Turners Falls and Northfield Mountain Pumped Storage Project area are not available. As there is significant uncertainty in the rate and timing of change as well as the effect of any changes experienced in the project area due to climate change, it is difficult to predict the impact of these changes on any particular species.”⁶⁶

NMFS concluded that “it is possible that changing seasonal temperature regimes could result in changes to the timing of seasonal migrations for all diadromous fish in the Connecticut River watershed.

Ensuring access to a diversity of suitable habitat, including climate resilient habitats, is essential for the continued survival and recovery potential of diadromous species. Safe, timely, and effective passage at the Turners Falls Project will support our restoration goals by promoting access to a greater expanse and diversity of spawning, rearing, and nursery habitat that is expected to support population resiliency in light of changing conditions.”⁶⁷

Careful management of the fish passage measures will be necessary to accommodate these potential impacts of climate change. To that end, MassDEP finds it necessary to include Special Condition 31 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 31.

M. Canal Drawdown Aquatic Organism Protection

Careful management of FirstLight’s annual power canal drawdown for maintenance is necessary to mitigate impacts to aquatic life. To that end, MassDEP finds it necessary to include Special Condition 32 for the Projects to comply with the Federal Clean Water Act, the Massachusetts Surface Water

⁶⁶ DOC, Preliminary Prescription, pp. 13.

⁶⁷ DOC, Preliminary Prescription, pp. 14.

Quality Standards, and other water quality-related requirements of state law. Accordingly, MassDEP imposes Special Condition No. 32.

N. Bald Eagle Protection Plan

The WQC Application included proposed articles applicable to both Projects requiring compliance with the submitted Bald Eagle Protection Plan. FirstLight included FFP Agreement provisions A400 (for Turners Falls) and B200 (for Northfield) for the Licensee to implement the Bald Eagle Protection Plan (BEPPs) in the WQC Application for both Projects. MassWildlife and USFWS supported this proposal and requested that FERC include it in any new license issued for the project pursuant to Section 10(j).

⁶⁸ MassDEP concurs with the position and recommendation of MassWildlife and USFWS. Therefore, MassDEP imposes Special Condition 33 to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law.

⁶⁸ USFW, Comments and Recommendation, p. 13; DFW COMMENTS, RECOMMENDATIONS, TERMS AND CONDITIONS, Application Ready for Environmental Analysis, Turners Falls Hydroelectric Project, FERC No. 1889-085; Northfield Mountain Pumped Storage Project, FERC Number 2485-071, p. 9.

O. Bat Protection Measures

The northern long-eared bat (NLEB; *Myotis septentrionalis*) was listed as federally threatened under the Endangered Species Act by the USFWS on April 2, 2015 (USFWS 2015). The species was reclassified as endangered on November 29, 2022, with the rule becoming effective March 31, 2023 (USFWS 2022a). NLEBs typically roost singly or in maternity colonies underneath bark or in cavities or crevices of live trees and snags (USFWS 2022b).

In the WQC Application FirstLight proposes to minimize project-related impacts to NLEB by cutting trees equal to or greater than 3 inches in diameter at breast height within the Northfield Mountain Pumped Storage and Turners Falls Project boundaries only between November 1 and March 31, unless they pose an immediate threat to human life or property (hazard trees). Both MassWildlife and USFWS

22. Seldon Gary

February 14, 2025 at 9:21:43 PM

I'm not precisely sure of this suggested wording, it's an attempt to to get 'everyone' who MAY want to have the info,

support this measure and requested that FERC include it in any new license issued for the project pursuant to Section 10(j). MassDEP concurs with their support and recommendations. Therefore, MassDEP imposes Special Condition 34 to comply with the Federal Clean Water Act, the Massachusetts Surface Water Quality Standards, and other water quality-related requirements of state law.

VI. Certification Provisions

MassDEP's authority to issue this certification is conferred by M.G.L. c. 21, § 27(3). Based on a review of the WQC Application, the information included in the administrative record, the information provided by FirstLight, and information provided by the public during the comment period, and other publicly available information on file with MassDEP, MassDEP has reasonable assurance that, through the imposition of the conditions described below, the activity will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, Massachusetts Surface Water Quality Standards at 314 CMR 4.00 and other water quality-related requirements of state law, as set forth herein. Therefore, MassDEP hereby grants certification for the Projects subject to the conditions Page 46 of 117DRAFT-1-24-25

set forth below. This certification shall take effect on the date that FERC issues a new license for the FirstLight Projects (FERC Nos. 1889, 2485).

In accordance with Section 401 of the Federal Clean Water Act, and pursuant to M.G.L. c. 21, §§ 27, 42 and 44, FirstLight shall comply with the following conditions which MassDEP finds are necessary to assure compliance with the applicable provisions of the Federal Clean Water Act Sections 208(e), 301, 302, 303, 306, and 307 and other water quality-related requirements of State law:

1. 2. 3. 4. 5. 6. 7. **Standard Conditions**

Prior to or at the time of filing with the Commission, the Licensee shall serve all representatives of MassDEP and, MassWildlife, MDFW, USFWS, NMFS, NPS, (all agencies listed in this Certificate, all signatories to the FERC relicensing process), the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, American Whitewater(AW), Appalachian Mountain Club (AMC), Crabapple Whitewater, Inc. (CAW), New England Flow(NE FLOW), and Zoar Outdoor (ZO), who all shall be on the service list a copy of any request the Licensee may file for amendment of the license, amendment or appeal of any fish, wildlife, or other aquatic life related license conditions, or extension of time requests for project construction or implementation of license article provisions.

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

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

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

To the extent allowed by federal and state law, MassDEP reserves the right to request modifications of this certification based on a written agreement with FERC or if a court of competent jurisdiction or appropriate state appeals forum stays, vacates or remands this certification. The Licensee retains any rights to participate in any proceeding or filing at FERC or MassDEP relating to modification of the certification.

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

23. Seldon Gary

February 22, 2025 at 9:44:13 PM

Here again, DEP argues it must COMPLY with the SWQS, the Licensee SHALL operate ... Always COMPLY with the SWQS in this Certificate!

24. Seldon Gary

February 3, 2025 at 9:37:50 PM

This is an EXISTING example of FL needing approval from, ...

This is how 'they all' should be. DEP and the other agencies should have final say authority over FL.

The people, through DEP with this Certificate, need assurance that the process of determining terms for use of the public trust resource are not dominated by a well heeled licensee.

established by the Licensee, and any federal and state occupational health or safety regulations for entering the facilities.

If any event arising from causes beyond the reasonable control of the Licensee or of any entity controlled by the Licensee, including its engineers, consultants, contractors and subcontractors, that delays or prevents the timely performance of any obligation under this certification notwithstanding the Licensee's reasonable efforts to fulfill the obligation (a "force majeure

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event)" occurs, then the time for performance shall be extended for an appropriate period of time. The requirement that the Licensee exercise "reasonable efforts" includes using reasonable efforts to anticipate any potential force majeure event and all reasonable efforts to address the effects of any such event (a) as it is occurring, and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. The Licensee shall bear the burden of demonstrating that a force majeure event has occurred or will occur, and that the delay was beyond the reasonable control and without the fault of the Licensee. Any extension of time must be confirmed by MassDEP in writing to be valid and enforceable. Such an extension of time must be in writing to have effect.

8. The Licensee shall operate the Projects in accordance with the conditions contained in the FERC license. Any modifications made during the licensing process that would have a significant or material effect on the conclusions or conditions contained in this WQC, as determined by MassDEP, shall be submitted to MassDEP for review and approval prior to licensing.

23 9. As set forth more specifically in this WQC, the Licensee shall operate the Project in a manner that maintains the existing and designated uses of the Connecticut River, as outlined in the SWQS at 314 CMR 4.00, and an integrated and diverse biological community within the Connecticut River, and as required by the FERC license.

10. The Licensee shall conduct all activities in conformance with the applicable performance standards for work in wetland resource areas as established by the Massachusetts Wetlands Protection Act, including the Rivers Protection Act, M.G.L. c. 131, § 40, and the implementing regulations at 310 CMR 10.00.

11. The Licensee shall comply with all applicable provisions of the Public Waterfront Act, M.G.L. c. 91, and the implementing regulations at 310 CMR 9.00.

12. The Licensee shall comply with all applicable provisions of the Water Management Act, M.G.L. c. 21G, and the implementing regulations at 310 CMR 36.00. The Licensee's non-consumptive water use is included in the Non-consumptive Water Use Statement filed with MassDEP by Northeast Generation Co. in March, 2000, and transferred to FirstLight Hydro on May 8, 2007.

24 Should the Licensee's non-consumptive water use increase, a Non-consumptive Water Use Statement for the increased water use shall be filed for review and approval by MassDEP.

13. To meet the requirements of Massachusetts laws, each of the conditions cited in this WQC shall not be made less stringent unless new data or other information is presented and MassDEP determines modification of this WQC is appropriate in consideration of the relevant water quality considerations, to the extent authorized by law.

14. To the extent authorized by law, MassDEP reserves the right to modify this WQC if there is a change in Massachusetts law or regulation upon which this WQC is based.

15. To the extent authorized by law, MassDEP reserves the right to add and alter the terms and conditions of this WQC during the life of the Projects as necessary to carry out its statutory responsibilities.

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16. MassDEP may request, at any time during which this WQC is in effect, that FERC reopen the license to make modifications MassDEP deems necessary to maintain compliance with the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, or other appropriate requirements of state law.

17. MassDEP may take enforcement action for noncompliance with this 401 Water Quality Certification pursuant to M.G.L. c. 21, §§ 42 and 44, M.G.L. c. 21A, § 16, and 310 CMR 5.00, to the extent authorized by applicable law.

Special Conditions

The following conditions correspond to, but are not necessarily identical to, the referenced proposed articles from the WQC Application.⁶⁹

Turners Falls Project Operations

1. Station No. 1 Upgrades (Proposed Article A100)

Within 3 years of license issuance, the Licensee shall automate Station No. 1 such that it is capable of being operated remotely and over a range of flows. The Licensee shall submit design plans to the Commission for automating Station No. 1. Upon Commission approval, the Licensee shall automate Station No. 1, including any changes required by the Commission.

2. Minimum Flows below Turners Falls Dam (Proposed Article A110)

Upon license issuance, the Licensee shall discharge from the Turners Falls Dam or from the gate located on the power canal ("canal gate") just below the Turners Falls Dam the following seasonal minimum flows.

Date Minimum Flows below Turners Falls Dam

01/01-03/31¹

- If the Naturally Routed Flow (NRF- definition provided later in this article) is ≤ 400 cubic feet per second (cfs), the Minimum Flow below Turners Falls Dam shall be 400 cfs or the NRF, whichever is less.
- If the NRF is > 400 cfs, the Minimum Flow below Turners Falls Dam shall be 400 cfs.

04/01-05/31

- If the NRF is $\leq 6,500$ cfs, the Minimum Flow below Turners Falls Dam shall be 67% of the NRF.
- If the NRF is $> 6,500$, the Minimum Flow below Turners Falls Dam shall be 4,290 cfs.

⁶⁹ Changes to the proposed articles include: (1) replacement of "will" with "shall"; (2) modifications to proposed Article A210, discussed at page 24; (3) modifications to proposed Article A190, discussed at page 28; (4) modifications to proposed Articles B200-220, discussed at page 36; and (5) modifications to proposed Articles A320, A330, and B220 concerning the enforcement authority of MassWildlife, NMFS, and USFWS.

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06/01-06/15^{2,3}

- If the NRF is $\leq 4,500$ cfs, the Minimum Flow below Turners Falls Dam shall be 67% of the NRF.
- If the NRF is $> 4,500$ cfs, the Minimum Flow below Turners Falls Dam shall be 2,990 cfs.

06/16-06/30³

- If the NRF is $\leq 3,500$ cfs, the Minimum Flow below Turners Falls Dam shall be 67% of the NRF.
- If the NRF is $> 3,500$ cfs, the Minimum Flow below Turners Falls Dam shall be 2,280 cfs.

07/01-11/15¹

- If the NRF is ≤ 500 cfs, the Minimum Flow below Turners Falls Dam shall be 500 cfs or the NRF, whichever is less.
- If the NRF is > 500 cfs, the Minimum Flow below Turners Falls Dam shall be 500 cfs.

11/16-12/31¹

- If the NRF is ≤ 400 cfs, the Minimum Flow below Turners Falls Dam shall be 400 cfs or the NRF, whichever is less.

25. Seldon Gary

February 7, 2025 at 2:38:29 PM
Another EXISTING example of FL
needing approval from, ...

26. Seldon Gary

February 22, 2025 at 10:03:16 PM
Move the decision making power
away from the Licensee, to these
agencies.
Are these the right agencies?
Anyone missing? FRCOG,
Montague, Gill, Erving,

27. Seldon Gary

February 22, 2025 at 11:27:41 PM
How long? Specify how long.

28. Seldon Gary

February 22, 2025 at 10:10:27 PM
Again, Move the decision making
power away from the Licensee,
to these agencies.
Are these the right agencies?
Anyone missing? FRCOG,
Montague, Gill, Erving,

• If the NRF is > 400 cfs, the Minimum Flow below Turners Falls Dam shall be 400 cfs.

1 From November 16 through March 31, the 400 cfs minimum flow below Turners Falls Dam shall be provided from the canal gate, having a design maximum capacity of 400 cfs. The Licensee shall open the canal gate to its maximum opening and implement ice mitigation measures, if necessary, to maintain the maximum opening. The Licensee shall monitor canal gate operations to determine if supplemental measures, such as cable-heating the gate, are needed to maintain flows at or as close to 400 cfs as possible.

2 One of the upstream fish passage adaptive management measures (AMMs) described in Article A330 calls for increasing the Total Minimum Bypass Flow below Station No. 1 (see Article A120) from June 1 to June 15 from 4,500 cfs to 6,500 cfs. If this AMM is enacted, and if the NRF is \leq 6,500 cfs, the Minimum Flow below the Turners Falls Dam shall be 67% of the NRF, subject to the conditions in Article A330. If this AMM is enacted, and if the NRF is > 6,500 cfs, the Minimum Flow below the Turners Falls Dam shall be 4,290 cfs, subject to the conditions in Article A330.

3 The magnitude of the Minimum Flow below Turners Falls Dam from June 1 to June 30 may be modified in the future pending fish passage effectiveness studies (see Article A330). If the Licensee conducts fish passage effectiveness studies, in consultation with the Massachusetts Division of Fisheries and Wildlife (MDFW), National Marine Fisheries Service (NMFS), and United States Fish and Wildlife Service (USFWS) and determines that migratory fish are not delayed by passing a greater percentage of the Total Minimum Bypass below Station No. 1 (see Article A120) via Station No. 1 discharges, the Licensee may file for a license amendment to increase the Station No. 1 discharge upon written concurrence of MDFW, NMFS, and USFWS. Prior to filing for a license amendment with the Commission, the Licensee shall consult MassDEP and address any of its comments in the license amendment filing.

Definition of Naturally Routed Flow

From December 1 through June 30, the NRF is defined as the hourly sum of the discharges from 12 hours previous as reported by the: Vernon Hydroelectric Project (FERC No. 1904), Ashuelot River

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DRAFT-1-24-25

United States Geological Survey gauge (USGS, Gauge No. 01161000), and Millers River USGS gauge (Gauge No. 01166500).

From July 1 through November 30, the NRF is defined as the hourly sum of the discharges averaged from 1 to 12 hours previous as reported by the: Vernon Hydroelectric Project, Ashuelot River USGS gauge, and Millers River USGS gauge. Upon license issuance until 3 years thereafter, the Licensee shall operate the Turners Falls Project based on the NRF computational method from July 1 through November 30 to determine if the Turners Falls Project can be operated in this manner. If the Turners

25 Falls Project cannot be operated in this manner, the Licensee shall consult with and obtain approval from MDFW, NMFS, and USFWS

on alternative means of computing the NRF that are feasible for Turners Falls Project operation and sufficiently dampen upstream hydroelectric project flexible operations.

The Minimum Flow below Turners Falls Dam may be temporarily modified if required by equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. If the Minimum Flow below Turners Falls Dam is so modified, the Licensee shall notify the Commission, MassDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days after such incident. The

27 Minimum Flow below Turners Falls Dam may also be temporarily modified for short periods less than 4(?) hours upon—

mutual agreement with the Licensee for the Northfield Mountain Pumped Storage Project (FERC No.

28 2485), upon written concurrence from MassDEP, MDFW, NMFS and USFWS, and upon 5 days' notice to the Commission.

3. Total Minimum Bypass Flows below Station No. 1 (Proposed Article A120)

Upon license issuance, the Licensee shall maintain the Total Minimum Bypass Flows below Station No. 1 as follows:

Date Total Minimum Bypass Flows below Station No. 1¹

01/01-03/31

- If the NRF is ≤ 400 cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 400 cfs, or the NRF, whichever is less.
- If the NRF is > 400 cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 1,500 cfs, or the NRF, whichever is less.

04/01-05/31

- If the NRF is $\leq 6,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be the NRF.
- If the NRF is $> 6,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 6,500 cfs.

06/01-06/15^{2,4} • If the NRF is $\leq 4,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be the NRF.

Date Total Minimum Bypass Flows below Station No. 1¹

- If the NRF is $> 4,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 4,500 cfs.

06/16-06/30⁴

- If the NRF is $\leq 3,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be the NRF.
- If the NRF is $> 3,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 3,500 cfs.

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07/01-08/31³

- If the NRF is ≤ 500 cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 500 cfs, or the NRF, whichever is less.
- If the NRF is > 500 cfs and $\leq 1,800$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be the NRF or 90% of the NRF.
- If the NRF is $> 1,800$ cfs, the Total Minimum Bypass below Station No. 1 shall be 1,800 cfs, or 90% of the NRF, whichever is less.

09/01-11/15³

- If the NRF is ≤ 500 cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 500 cfs, or the NRF, whichever is less.
- If the NRF is > 500 cfs and $\leq 1,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be the NRF, or 90% of the NRF.
- If the NRF is $> 1,500$ cfs, the Total Minimum Bypass below Station No. 1 shall be 1,500 cfs, or 90% of the NRF, whichever is less.

11/16-12/31³

- If the NRF is < 400 cfs, then the Total Minimum Bypass Flow below Station No. 1 shall be 400 cfs, or the NRF, whichever is less.
- If the NRF is > 400 cfs and $\leq 1,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be the NRF or 90% of the NRF.
- If the NRF is $> 1,500$ cfs, the Total Minimum Bypass below Station No. 1 shall be 1,500 cfs, or 90% of the NRF, whichever is less.

¹From license issuance until 3 years thereafter, Station No. 1 shall not be automated. During those 3 years, if Station No. 1 is the only source, other than the Fall River, Turners Falls Hydro, LLC, or Milton Hilton, LLC to provide the additional flow needed to meet the Total Minimum Bypass Flow below Station No. 1, the Licensee shall maintain the Station No. 1 discharge such that the Turners Falls Dam Minimum Flow will be as shown in Article A110, or higher flows, in cases where the additional flow

29. Seldon Gary

February 7, 2025 at 2:34:16 PM

This is an EXISTING example of FL needing approval from, ...

30. Seldon Gary

February 22, 2025 at 11:29:57 PM

How long? Specify how long.

31. Seldon Gary

February 22, 2025 at 10:13:05 PM

Again, move the decision making power away from the Licensee, to these agencies.

Are these the right agencies?

Anyone missing? FRCOG,

Montague, Gill, Erving,

cannot be passed through Station No. 1.

²One of the upstream fish passage adaptive management measures (AMMs) described in Article A330 calls for increasing the Total Minimum Bypass Flow below Station No. 1 from June 1 to June 15 from 4,500 cfs to 6,500 cfs. If this AMM is enacted, and if the NRF is $\leq 6,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 shall be the NRF, subject to the conditions in Article A330. If this AMM is enacted, and the NRF $> 6,500$ cfs, the Total Minimum Bypass Flow below Station No. 1 is 6,500 cfs, subject to the conditions in Article A330.

³From July 1 to August 31, when the NRF is greater than 1,800 cfs, the Total Minimum Bypass Flow below Station No.1 shall be 1,800 or 90% of the NRF, whichever is less. From September 1 to December 31, when the NRF is greater than 1,500 cfs, the Total Minimum Bypass Flow below Station No. 1 shall be 1,500 cfs or 90% of the NRF, whichever is less. From July 1 to December 31, if the Total Minimum Bypass Flow below Station No. 1 shall be reduced by 10%, it shall not be taken from the Turners Falls Dam Minimum Flow (Article 110).

⁴The amount of flow needed from Station No. 1 from June 1 to June 30 may be modified in the future pending fish passage effectiveness studies. If the Licensee conducts fish passage effectiveness studies, in consultation with the MDFW, NMFS, and USFWS and determines that migratory fish are not delayed by passing a greater percentage of the Total Minimum Bypass Flow below Station No. 1 via

²⁹ Station No. 1 discharge, the Licensee may file for a license amendment to increase the magnitude of Station No. 1 discharge upon written concurrence of MDFW, NMFS, and USFWS. Prior to filing for a Page 52 of 117DRAFT-1-24-25

license amendment with the Commission, the Licensee shall consult MassDEP, American Whitewater (AW), Appalachian Mountain Club (AMC), Crabapple Whitewater, Inc. (CAW), New England Flow (NE FLOW), and Zoar Outdoor (ZO) and address any comments of those entities in the license amendment filing.

If the Station No. 1 units are used to maintain the Total Minimum Bypass Flow below Station No. 1, and if some or all of the Station No. 1 units become inoperable, the balance of the flow needed to maintain the Total Bypass flow below Station No. 1 shall be provided from either the Turners Falls Dam Minimum Flow (dam or canal gate), Fall River, Turners Falls Hydro, LLC or Milton Hilton, LLC. The Total Minimum Bypass Flow below Station No. 1 may be temporarily modified if required by equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. If the Total Minimum Bypass Flow below Station No. 1 is so modified, the Licensee shall notify the Commission, MassDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days

³⁰ after such incident. The total bypass flow below Station No. 1 may also be temporarily modified for short periods less than 4(?) hours upon mutual agreement with the Licensee for the Northfield Mountain Pumped Storage

³¹ Project (FERC No. 2485), upon written concurrence from MassDEP, MDFW, NMFS, and USFWS, and upon 5 days' notice to the Commission.

4. Minimum Flows below Cabot Station (Proposed Article A130)

Upon license issuance, the Licensee shall maintain Minimum Flows below Cabot Station, or the NRF, whichever is less, as follows.

Date Minimum Flow below Cabot Station

01/01-03/31 3,800 cfs or the NRF, whichever is less

04/01-05/31 8,800 cfs from midnight to 7:00 pm or the NRF, whichever is less and 6,500 cfs from 7:00 pm to midnight or the NRF, whichever is less.

06/01-06/15 6,800 cfs or the NRF, whichever is less

06/16-06/30 5,800 cfs or the NRF, whichever is less

07/01-08/31 1,800 cfs or 90% of the NRF, whichever is less

09/01-11/15 1,500 cfs or 90% of the NRF, whichever is less

11/16-11/30 1,500 cfs or 90% of the NRF, whichever is less

32. Seldon Gary

February 22, 2025 at 11:30:21 PM
How long? Specify how long.

33. Seldon Gary

February 22, 2025 at 10:13:52 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

34. Seldon Gary

February 22, 2025 at 11:31:36 PM
How long? Specify how long.

35. Seldon Gary

February 22, 2025 at 10:14:32 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

12/01-12/31 3,800 cfs or NRF, whichever is less

1From July 1 to November 30, the Minimum Flow below Cabot Station is 1,800 (07/01-08/31) and 1,500 cfs (09/01-11/30) or 90% of the NRF, whichever is less. If the Minimum Flow below Cabot Station is reduced by 10% during these periods, it shall not be taken from the Turners Falls Dam Minimum Flow (Article A110).

The Minimum Flow below Cabot Station may be temporarily modified if required by equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. If the Minimum Flow below Cabot Station is so modified, the Licensee shall notify the Commission, MassDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days after such incident. The

32 Minimum Flow below Cabot Station may also be temporarily modified for ~~short periods less than 4(?) hours~~ by ~~upon mutual agreement with the Licensee for the Northfield Mountain Pumped Storage Project (FERC No. 2485), upon written concurrence from~~
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33 MassDEP, MDFW, NMFS and USFWS, and upon 5 days' notice to the Commission.

5. Cabot Station Ramping Rates (Proposed Article A140)

Upon license issuance until 3 years after license issuance, the Licensee shall ramp Cabot Station as follows.

Date Cabot Station Ramping Rates:

04/01-06/30 Up and Down Ramping at a rate of 2,300 cfs/hour

07/01-08/15 Up Ramping at a rate of 2,300 cfs/hour from 8:00 am to 2:00 pm

Three years after license issuance, the Licensee shall ramp Cabot Station as follows.

Date Cabot Station Ramping Rates:

04/01-06/30 Up and Down Ramping at a rate of 2,300 cfs/hour

1If the NRF is greater than the sum of the hydraulic capacity of Cabot Station and Station No. 1 and the Minimum Flow below Turners Falls Dam in effect at the time, the Cabot Station up-ramping rates will not apply.

The Cabot Station Ramping Rates above shall take precedence over the Flow Stabilization below Cabot Station (Article A160).

The Cabot Station Ramping Rates may be temporarily modified if required by equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. If the Cabot Station Ramping Rates are so modified, the Licensee shall notify the Commission, MassDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days after such incident. The Cabot Station Ramping

34 Rate may also be temporarily modified for ~~short periods less than 4(?) hours~~ upon mutual agreement with the Licensee for

35 the Northfield Mountain Pumped Storage Project (FERC No. 2485), upon written concurrence from MassDEP, MDFW, NMFS, and USFWS, and upon 5 days' notice to the Commission.

6. Variable Releases from Turners Falls Dam and Variable Flow below Station No. 1 (Proposed Article A150)

For recreation and ecological conservation purposes, upon license issuance, the Licensee shall provide variable releases from the Turners Falls Dam and a variable flow below Station No. 1 as shown below.

Variable Releases from Turners Falls Dam

Magnitude of Variable Release from Turners Falls Dam

14,000 cfs, or the NRF, whichever is less

Dates when Variable Releases may occur 2July 1 through October 31

3Total No. of 2-day events 5 events for a total of 10 Variable Releases, but could potentially be 11 Variable Releases
subject to footnote 3

36. Seldon Gary

February 22, 2025 at 10:15:10 PM
 Again, move the decision making
 power away from the Licensee,
 to these agencies.
 Are these the right agencies?
 Anyone missing? FRCOG,
 Montague, Gill, Erving,

Days of Variable Release for 2 day-events Saturday and Sunday- must be two consecutive days

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Hours of Variable Release 10:00 am to 2:00 pm, 4 hrs/day, Saturday and Sunday

Magnitude of Variable Release from Turners Falls

Dam from Saturday at 2:00 pm to Sunday at 10:00 am.

See footnote 4

5 Up-Ramping Rates at Start of Variable Release 6 Down-Ramping Rates at End of Variable Release See footnote 5

See footnote 6

1 If the NRF < 2,500 cfs during the scheduled variable release (see footnote 2 below relative to scheduling variable releases), there shall be no variable release and it shall not be rescheduled.

2 The Licensee shall consult AW, AMC, commercial outfitters, MassDEP, MDFW, National Park Service (NPS), NE FLOW, and USFWS no later than March 1 annually over the license term to develop a mutually agreeable schedule for the variable releases. When developing the schedule, there shall be at least one weekend per month, between July 1 and October 31, when no variable releases are provided. The

38 developed schedule will be finalized upon written concurrence from MassDEP, MDFW, National Park Service (NPS), and USFWS.

3 The Licensee conducts annual canal drawdowns for maintenance purposes resulting in the NRF being passed at the Turners Falls Dam. If the canal drawdown occurs between July 1 and October 31 and the NRF is being passed either on Saturday from 10:00 am- 2:00 pm or Sunday from 10:00 am-2:00 pm, the total number of releases at the Turners Falls Dam shall remain at 10 releases. However, if the canal drawdown does not occur between July 1 and October 31 on Saturday from 10:00 am-2:00 pm or Sunday from 10:00 am-2:00 pm, the Licensee shall provide an additional consecutive day of variable release such that one of the 2-day events is a 3-day consecutive event resulting in a total of 11 releases.

The additional day shall either be Friday from 10:00 am-2:00 pm before the scheduled weekend variable release or Monday from 10:00 am-2:00 pm after the scheduled weekend variable release. If there ends up being one 3-day event, the magnitude of release from Friday at 2:00 pm to Saturday at 10:00 am (or Sunday at 2:00 pm to Monday at 10:00 am), shall be computed as noted in footnote 4.

4 This flow shall be calculated as: [(Variable Flow Release- Minimum Flow below Turners Falls Dam as defined in Article A110)/2]. If there is a 3-day event as noted in footnote 3, the variable flow release from Friday at 2:00 pm to Saturday at 10:00 am (or from Sunday at 2:00 pm to Monday at 10:00 am) shall be based on the same calculation.

5 At the beginning of the variable release, if the NRF is > 4,000 cfs, the Licensee shall up-ramp from the Minimum Flow below Turners Falls Dam as defined in Article A110 to 4,000 cfs in two hours, not to exceed 2,000 cfs/hr.

At the beginning of the variable release, if the NRF is between 2,500 and 4,000 cfs, the Licensee shall up ramp at 50% of the NRF per hour.

6 At the end of the variable release, if Turners Falls Dam variable release is between 2,500 and 4,000 cfs, the Licensee shall down ramp at 50% of the variable release per hour.

Variable Flow below Station No. 1

Magnitude of Variable Flow below Station No. 1 12,500 cfs, or the NRF, whichever is less

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Dates when Variable Flow may occur 1 July 1 through October 31

Total No. of 2-day events 7 events for a total of 14 Variable Flows

Days of Variable Flow Saturday and Sunday- must be two consecutive days

Hours of Variable Flow 10:00 am to 2:00 pm, 4 hrs/day

37. Seldon Gary

February 22, 2025 at 10:15:30 PM

Again, move the decision making power away from the Licensee, to these agencies.

Are these the right agencies?

Anyone missing? FRCOG, Montague, Gill, Erving,

38. Seldon Gary

January 27, 2025 at 11:20:57 PM

How long? Specify how long.

39. Seldon Gary

January 27, 2025 at 11:21:46 PM

Specify how soon.

40. Seldon Gary

February 22, 2025 at 11:25:48 PM

How long? Specify how long.

41. Seldon Gary

February 22, 2025 at 10:16:14 PM

Again, move the decision making power away from the Licensee, to these agencies.

Are these the right agencies?

Anyone missing? FRCOG, Montague, Gill, Erving,

42. Seldon Gary

February 14, 2025 at 9:57:46 PM

Have I separated out the commercial outfitters? That is my intent.

Magnitude of Variable Flow below Station No. 1 from Saturday at 2:00 pm to Sunday at 10:00 am.

See Footnote 3

1If the NRF < 2,500 cfs, during the scheduled flow (see footnote 2 below relative to scheduling the flow), there shall be no 2,500 cfs flow and it shall not be rescheduled.

2The Licensee shall consult AW, AMC, commercial outfitters, MassDEP, MDFW, NPS, NE FLOW, and USFWS no later than March 1 annually over the license term to develop a mutually agreeable schedule for the variable flow. When developing the schedule there shall be at least one weekend per month, between July 1 and October 31, when no variable flow is provided. The developed schedule will be finalized upon written concurrence from MassDEP, MDFW, National Park Service (NPS), and USFWS.

3From July 1 to August 31, the Total Minimum Bypass Flow below Station No. 1 is defined in Article A120. If the NRF is > 1,800 cfs, the Total Minimum Bypass below Station No. 1 shall be 1,800 cfs, or 90% of the NRF, whichever is less. The magnitude of flow below Station No. 1 from Saturday at 2:00 pm to Sunday at 10:00 am from July 1 to August 31 shall be computed as follows:

(2,500 cfs + Total Minimum Flow below Station No. 1 as defined in Article A120)/2.

From September 1 to November 15, the Total Minimum Bypass Flow below Station No. 1 is defined in Article A120. If the NRF is > 1,500 cfs, the Total Minimum Bypass below Station No. 1 shall be 1,500 cfs, or 90% of the NRF, whichever is less. The magnitude of flow below Station No. 1 from Saturday at 2:00 pm to Sunday at 10:00 am from September 1 to November 15 shall be computed as follows:

(2,500 cfs + Total Minimum Flow below Station No. 1 as defined in Article A120)/2.

When implementing the variable releases from the Turners Falls Dam or the 2,500 cfs flow below Station No. 1, the Licensee is still required to maintain the operational requirements in License Articles A110, A120, A130, A140, A160 and A190.

The above variable release from the Turners Falls Dam and variable flow below Station No. 1 may be temporarily modified for up to twelve hours if required by equipment malfunction or operating emergencies reasonably

beyond the control of the Licensee. If the Turners Falls Dam variable release or variable flow below

Station No. 1 are so modified, the Licensee shall notify AW, AMC, commercial outfitters, MassDEP,

MDFW, NMFS, NPS, NE FLOW, and USFWS as soon as possible, and no later than three hour after such modification. The Turners Falls Dam variable

release or variable flow below Station No. 1 may also be temporarily modified for short-periods less than 4(?) hours upon—

mutual agreement with the Licensee for the Northfield Mountain Pumped Storage Project (FERC No.

2485), upon written concurrence from AW, AMC, commercial outfitters, MassDEP, MDFW, NMFS, NPS, NE-

FLOW and USFWS, and the mutual agreement of commercial outfitters, and NE FLOW.

7. Flow Stabilization below Cabot Station and Allowable Deviations for Flexible Operations (Proposed Article A160)

Three years after license issuance, the Licensee shall maintain $\pm 10\%$ of the NRF below Cabot Station as Page 56 of 117 DRAFT-1-24-25 follows.

Date Flow Stabilization below Cabot Station:

04/01-05/15:

Provide $\pm 10\%$ of the NRF below Cabot Station from 7:00 pm to midnight, with allowable deviations up to $\pm 20\%$ of the NRF for up to 22 hours total from 04/01-05/15 (the 22 hours shall be used from 7:00 pm to midnight).

05/16-05/31:

Provide $\pm 10\%$ of the NRF below Cabot Station from 7:00 pm to midnight, with allowable deviations up to $\pm 20\%$ of the NRF for up to 18 hours total from 05/16-05/31 (the 18 hours shall be used from 7:00 pm to midnight).

06/01-06/15: Provide $\pm 10\%$ of the NRF below Cabot Station with allowable deviations up to

43. Seldon Gary

January 28, 2025 at 10:56:45 AM

All the hours specified in the table on p.58 are too long, nothing should be longer than 10 hours per month.

44. Seldon Gary

January 28, 2025 at 11:19:46 AM

ISO-NE is rather opaque to the public in regards to what it pays the Licensee for. How can there be enforceable restrictions against ISO-NE and the Licensee dressing up a profit opportunity as an 'emergency' while River flows pay the price ??

±20% of the NRF for up to 7 hours total from 06/01-06/15.

06/16-06/30: Provide ±10% of the NRF below Cabot Station with allowable deviations up to ±20% of the NRF for up to 7 hours total from 06/16-06/30.

07/01-08/15: Provide ±10% of the NRF below Cabot Station with allowable deviations up to ±20% of the NRF for up to 55 hours total from 07/01-08/15.

08/16-08/31: Provide ±10% of the NRF below Cabot Station with allowable deviations up to ±20% of the NRF for up to 27 hours total from 08/16-08/31.

09/01-10/31: Provide ±10% of the NRF below Cabot Station with allowable deviations up to ±20% of the NRF for up to 44 hours total from 09/01-10/31.

11/01-11/30: Provide ±10% of the NRF below Cabot Station with allowable deviations up to ±20% of the NRF for up to 11 hours total from 11/01-11/30.

1 If the NRF is greater than the sum of the hydraulic capacity of Cabot Station and Station No. 1 and the Minimum Flow below Turners Falls Dam in effect at the time, the Flow Stabilization below Cabot Station shall not apply.

2 From April 1 to June 30, the NRF flow may be reduced by 10% or up to 20% for select hours. If the NRF is reduced during this period, the flow shall be taken from Cabot Station generation.

3 From July 1 to November 30, the NRF flow may be reduced by 10% or up to 20% for select hours. If the NRF is reduced during this period, the flow shall not be taken from the Turners Falls Dam Minimum Flow.

Beginning three years after license issuance, the Licensee may deviate from the Flow Stabilization below Cabot Station and Cabot Station Ramping Rates (Article A140) for a **certain number of hours** in July, August, September, October and November, hereinafter referred to as flexible operations.

The Licensee has restricted discretionary flexible operating capability to respond to (profit from) elevated energy prices, as defined in paragraph (a) below, from July 1 to November 30, as well as unrestricted capability

to respond to emergencies, **Independent System Operator-New England (ISO-NE, or its successors)** transmission and power system requirements, and other regulatory requirements as defined in paragraph (b) below.

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(a) The Licensee may deviate from the Flow Stabilization below Cabot Station and Cabot Station Ramping Rates (Article A140). The number of hours of flexible operations, which may be used at the discretion of the Licensee, are as follows.

Date Allowable Deviations from Cabot Station Ramping Rates (Article A140) and

Flow Stabilization below Cabot Station

07/01-07/31 20 hours of flexible operations with no more than 7 flexible events per month

08/01-08/31 26 hours of flexible operations with no more than 7 flexible events per month

09/01-09/30 23 hours of flexible operations with no more than 7 flexible events per month

10/01-10/31 20 hours of flexible operations with no more than 7 flexible events per month

11/01-11/30 28 hours of flexible operations with no more than 7 flexible events per month

(b) If compliance with the Flow Stabilization below Cabot and Cabot Station Ramping Rates (Article A140) would cause the Licensee to violate or breach any law, any applicable license, permit, approval, consent, exemption or authorization from a federal, state, or local governmental authority, any applicable agreement with a governmental entity, the Licensee may deviate from the Flow Stabilization below Cabot and Cabot Station Ramping Rates (Article A140) to the least degree necessary to avoid such violation or breach. The Licensee may also deviate from the Flow

45. Seldon Gary
February 22, 2025 at 11:44:54 PM
Close loopholes.
46. Seldon Gary
February 22, 2025 at 11:46:12 PM
Close loopholes.
47. Seldon Gary
February 22, 2025 at 11:46:51 PM
Close loopholes.
48. Seldon Gary
February 22, 2025 at 11:26:17 PM
How long? Specify how long.
49. Seldon Gary
February 22, 2025 at 11:26:37 PM
How long? Specify how long.
50. Seldon Gary
February 22, 2025 at 10:18:30 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving.
51. Seldon Gary
February 22, 2025 at 11:48:17 PM
Be specific, like this.

Stabilization below Cabot and Cabot Station Ramping Rates for the following reasons:

(1) To implement Flood Flow Operations as defined in Article A170.

(2) To perform demonstrations of the resources' operating capabilities under ISO-NE, or its successors, rules and procedures such as, maintaining the Licensee's capacity

accreditation (or its successor) or its fast start reserve eligibility. The Licensee ~~shall seek~~

~~to perform these demonstrations at times that will not cause it to deviate from the~~

conditions in Articles A110- A160, with recognition that April 1 to June 30 ~~should will be~~

~~avoided, to the maximum extent possible.~~

(3) To manage the Turners Falls Impoundment to stay within its licensed operating limits in

Article A190, with recognition that deviations from April 1 to June 30 ~~should will be avoided~~
~~to the maximum extent possible.~~

(4) If compliance with Articles A110-A160 would cause a public safety hazard or prevent timely rescue.

*ISO-NE, or its successors, (or another recognized entity with responsibilities for regional energy and capacity supply) requirements are circumstances when ISO-NE requires the Licensee to be fully available and, if necessary, responsive.

The Flow Stabilization below Cabot Station may be temporarily modified, for no more than 12 hours if required by equipment

malfunction or operating emergencies reasonably beyond the control of the Licensee. If the Flow Page 58 of 117DRAFT-1-24-25

Stabilization below Cabot Station is so modified, the Licensee shall notify the Commission, MassDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days after such incident. The

Flow Stabilization below Cabot Station may also be temporarily modified for ~~short periods less than 4(?) hours by~~
~~upon mutual~~

~~agreement with the Licensee for the Northfield Mountain Pumped Storage Project (FERC No. 2485), upon written~~
~~concurrence from~~

MassDEP, MDFW, NMFS, and USFWS, and upon 5 days' notice to the Commission.

8. Flood Flow Operations (Proposed Article A170)

Upon license issuance, the Licensee shall operate the Project in accordance with its existing agreement with the United States Army Corps of Engineers (USACE). This agreement, memorialized in the Reservoir and River Flow Management Procedures (1976), as it may be amended from time to time, governs how the Turners Falls Project will operate during flood conditions and coordinate its operations with the Licensee of the Northfield Mountain Pumped Storage Project (FERC No. 2485).

9. Cabot Station Emergency Gate Use (Proposed Article A180)

Upon license issuance, the Licensee shall use the Cabot Station Emergency Gates under the following conditions: a) a Cabot load rejection which could cause overtopping of the canal, b) dam safety issues such as potential canal overtopping or partial breach, and c) to discharge up to approximately 500 cfs from April 1 to June 15 for debris management. The Licensee shall avoid discharging flows higher than 500 cfs through the gates from April 1 to June 15 if practicable; however, if necessary to discharge higher flows, the Licensee shall coordinate with NMFS to minimize potential impacts to Shortnose Sturgeon in the area below Cabot Station.

10. Turners Falls Impoundment Water Level Management (Proposed Article A190, as amended)

Upon license issuance, the Licensee shall operate the Turners Falls Impoundment, as measured at the Turners Falls Dam, as follows:

(a) Maintain water levels between elevation 178.5 feet and 185 feet National Geodetic Vertical Datum of 1929 (NGVD29) except under the following circumstances:

Discretionary Events:

The Licensee may operate between elevations 178.5 and 177.5 feet no more than 25 times per year for no more than 12 hours per event and no more than 5 times a year for no more than 24 hours per event.

Nondiscretionary Events – The Licensee may deviate from the operating range of 178.5-185

52. Seldon Gary

January 28, 2025 at 3:02:56 PM
Adding ENFORCEABLE RESTRICTIONS in order to guard against ISO-NE dressing up a FL profit opportunity as a 'demonstration of the Licensee's operating capabilities' is needed.

I don't have wording at this time.

53. Seldon Gary

February 23, 2025 at 10:29:48 AM
Close loopholes.

54. Seldon Gary

February 12, 2025 at 12:45:41 PM
Again, adding ENFORCEABLE RESTRICTIONS in order to guard against ISO-NE dressing up a FL profit opportunity as a 'wholesale market requirements, transmission and power system requirements, and other regulatory requirements during an emergency condition as currently defined in the ISO-NE open access transmission tariff or a similar condition' is needed.

55. Seldon Gary

February 12, 2025 at 12:51:44 PM
Because FL is granted license to 'use' the public trust river, FL must be required to pay attention to the public bodies protecting the river, and to do so quickly, and to face consequences for not

56. Seldon Gary

February 12, 2025 at 12:32:19 PM
This seems to be an additional 'catch-all' loophole. The conditions referred to are not overly strict, they reasonably represent an attempt to force FL to be minimally respectful of the river!

My suggested changes just below may make this less worse, but it'd be better to remove it.

57. Seldon Gary

February 22, 2025 at 10:20:53 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving,

58. Seldon Gary

February 12, 2025 at 1:11:51 PM
I'm not tracking this info exactly, but this seems to be a large loophole in need of closure or tightening.

only to the extent necessary to:

meet minimum flow requirements below the Turners Falls Dam, in the bypass reach below Station No. 1, or below Cabot Station, as required by Special Conditions 2-7, when the Naturally Routed Flow (NRF) is insufficient to meet the requirements of Special Conditions 2-7. This nondiscretionary exception shall only apply if it does not immediately follow a discretionary event specified in (a)1 above. comply with Special Condition 8 governing operations during flood conditions, as provided in the Reservoir and River Flow Management Procedures agreement reached with the United States Army Corp of Engineers.

1. 2. 3. Page 59 of 117DRAFT-1-24-25

52 4. perform demonstrations of the Licensee's operating capabilities, as required by ISO New

53 England, or its successors, pursuant to Special Condition 7. The Licensee shall seek to perform these demonstrations at times that will not cause it to drawdown below 178.5 feet nor at times on or between the Memorial Day and Labor Day holiday weekends.

5. avoid a public safety hazard or facilitate a timely rescue.

54 6. respond to wholesale market requirements, transmission and power system requirements,

and other regulatory requirements during an emergency condition as currently defined in the ISO-NE open access transmission tariff or a similar condition as defined in the future by ISO-NE or its successor. After fulfilling any such requirements during an emergency condition, the Licensee will have an exception to the Cabot Flow Stabilization requirement in Special Condition 7 (proposed Article A160) to utilize the NRF for up to 73 days to bring the TFI elevation back above 178.5 feet and refill the Northfield upper reservoir in order to ensure the Northfield Pumped Storage facility is fully able to respond to extended or future emergency conditions, but shall at all times maintain the minimum flow requirements below Cabot Station and in the bypass reach.

55 7. address equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. The Licensee shall notify MassDEP of such instances within 24 hours of acquiring knowledge of the equipment malfunction or operating emergency necessitating implementation of this exception.

8. operate if the NRF is below 2,000 cfs and such operations do not include a discretionary event.

56 For the threeone-year period following issuance of the License, any noncompliance with Special Condition 10(a)1-8 above shall not be an enforceable violation of these requirements if the Licensee, after consultation with and upon written concurrence from MassDEP, MDFW, NFMS, was acting in good faith and the noncompliance was not reasonably foreseeable

57 and reasonably within the control of the Licensee. For the term of the License, the Licensee shall submit biannual reports, with supporting data, to MassDEP and FERC summarizing all instances in which TFI levels were outside of the 178.5-185 range with an explanation why the range was exceeded; whether it was an instance of noncompliance with the above Special Condition 10(a)1-8; what measures could be employed in the future to avoid the noncompliance; and when those measures will be implemented. All such measures to avoid noncompliance must be implemented within 63 months of the biannual report identifying the noncompliance. MassDEP will review each biannual report and determine whether it includes instances of noncompliance.

58 (b) Limit the rate of rise of the Turners Falls Impoundment water level to be less than 0.9 feet/hour from May 15 to August 15 from 8:00 am to 2:00 pm. However, if the NRF is greater than the sum of the hydraulic capacity of Cabot Station and Station No. 1 and the Minimum Flow below Turners Falls Dam in effect at the time, the Turners Falls Impoundment rate of rise requirement shall not apply.

59. Seldon Gary

February 22, 2025 at 11:27:16 PM
How long? Specify how long.

60. Seldon Gary

February 22, 2025 at 10:24:35 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

61. Seldon Gary

February 12, 2025 at 1:54:01 PM
Again, I'm not tracking this info exactly, but this seems to be a large loophole in need of closure or tightening.

Seems that changing the allowable NRF deviation from $\pm 10\%$ to $\pm 20\%$ is a very large change. To be allowed to, ... parts of 'Article A160.'

Unless I'm missing something, the references to 'Article A160' are not part of, or presented in the WQC. If this is so, perhaps making the 'Article A160' available would be an

62. Seldon Gary

February 22, 2025 at 10:24:53 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

63. Seldon Gary

February 23, 2025 at 11:30:04 AM
Add specificity, close loopholes.

64. Seldon Gary

January 28, 2025 at 3:50:26 PM
File one month after, like the three filing requirements just

65. Seldon Gary

February 23, 2025 at 11:06:17 AM
Add specificity, close loopholes.

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(c) The rate of rise of the Turners Falls Impoundment may be temporarily modified if required by equipment malfunction or operating emergencies reasonably beyond the control of the Licensee. If the rate of rise of the Turners Falls Impoundment is so modified, the Licensee shall notify the Commission, MassDEP, MDFW, NMFS, and USFWS as soon as possible, but no later than 10 days after such incident. The rate of rise of the Turners Falls Impoundment

59 may also be temporarily modified for short periods less than 1 day by upon mutual agreement with the Licensee
60 for the Northfield Mountain Pumped Storage Project (FERC No. 2485), upon written concurrence from MassDEP, MDFW,

NMFS, and USFWS, and upon 5 days' notice to the Commission.

61 (d) The Licensee may increase the allowable NRF deviation from $\pm 10\%$ to $\pm 20\%$ to better manage Turners Falls Impoundment water levels. The increased flow deviation is limited by the number of hours shown in the first table of Article A160. This allowance for an increased flow deviation is in addition to the exceptions outlined in paragraphs (a) and (b) of Article A160. As such, the increased flow allowable deviations outlined in this paragraph shall not count against any time allotment for exceptions outlined in paragraphs (a) and (b) of Article A160. Similarly, operations meeting the exception criteria outlined in paragraphs (a) and (b) of Article A160 shall not count against any time allotment for allowable deviations outlined in this paragraph. Allowable flow deviations in excess of $\pm 10\%$ of NRF resulting from conflicting operational requirements shall not count against any time allotment for allowable deviations outlined in this paragraph.

11. Project Operation, Monitoring and Reporting Plan (Proposed Article A200)

Within 1 year of license issuance, the Licensee shall file with the Commission, for approval, a Project Operation, Monitoring and Reporting Plan describing how the Licensee will document compliance with the operating conditions. The Plan shall include the following:

(a) A description of how the Licensee will comply with Minimum Flows below Turners Falls Dam (Article A110), Total Minimum Bypass Flows below Station No. 1 (Article A120), Minimum Flows below Cabot Station (Article A130), Cabot Station Ramping Rates (Article A140), Variable Releases from Turners Falls Dam and Variable Flow below Station No. 1 (Article A150), Flow Stabilization below Cabot Station (Article A160, implementation starting 3 years after license issuance), and Turners Falls Impoundment Water Level Management (Article A190). These are collectively referred to hereinafter as the operating requirements.

62 (b) A provision to file with the Commission, after consultation and written concurrence with the MassDEP, MDFW, NMFS,

63 and USFWS, a minimum flow and operation compliance report detailing implementation of the plan, including any allowable deviations' Allowable Deviations' as specified, and limited to the Allowable Deviations just below on p.62 in this Special Condition #11, that occurred during the reporting period. For the period

64 January 1 to March 31 and July 1 to December 31, the compliance report, including any deviations, shall be filed with the Commission by March/February 1 of the following year. For the months of April, May and June, the monthly compliance report, including any deviations, shall be filed with the Commission on June 1, July 1 and August 1, respectively. Upon license issuance until 3 years thereafter, the Licensee shall document on an hourly basis for each day any allowable deviations from the Cabot Station Ramping Rates (Article A140) and demonstrate progress in each reporting period towards meeting

the Flow Stabilization below Cabot Station (Article A160). Beginning three years after license issuance until license expiration, the Licensee shall document on an hourly basis for each day any allowable deviations from the Cabot Station Ramping Rates restrictions (Article A140) and Flow Page 61 of 117 DRAFT-1-24-25

Stabilization below Cabot Station restrictions (Article A160). Each day, from April 1 to November

66. Seldon Gary

January 28, 2025 at 3:59:47 PM
What are these categories? Are there any others? Are others needed?
Are they reasonable, or are they loopholes?

Again, unless I'm missing something, the references to 'Articles A160 & A190' are not part of, or presented in the WQC. If this is so, perhaps making the 'Articles A160 & A190' available would be an improvement to the WQC.

67. Seldon Gary

February 22, 2025 at 10:26:10 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving,

68. Seldon Gary

February 23, 2025 at 12:00:43 PM
MaDEP, STAND UP TO FERC. The Clean Water Act's 401 process requires the inclusion of the WQC, as written on the state level, to be part of any FERC granted License. Citizens, and the River need MaDEP to hold, not relinquish our rights to protect the River.

69. Seldon Gary

February 23, 2025 at 12:02:11 PM
Sooner, the Licensee wants to use our public trust, they must be quickly transparent.

70. Seldon Gary

February 12, 2025 at 2:18:59 PM
Are these 3 elevations all that are needed in the TFI?

71. Seldon Gary

February 12, 2025 at 2:22:57 PM
Are these 2 anticipated discharges all that are needed? Maybe Cabot also?

72. Seldon Gary

February 23, 2025 at 12:13:44 PM
Add specificity, close loopholes.

73. Seldon Gary

February 23, 2025 at 12:14:48 PM
Specify how long.

74. Seldon Gary

February 23, 2025 at 12:17:32 PM
Close loopholes.

75. Seldon Gary

February 23, 2025 at 12:18:42 PM
Close loopholes.

30, the Licensee shall record any allowable deviations in a spreadsheet showing the daily deviations, the reason for the deviation, the number of hours, and scope. The Licensee shall provide the total number of deviations to the MassDEP, MDFW, NFMS, and USFWS per the reporting schedule above.

Allowable deviations shall be tracked as follows:

- Identify Allowable Deviations: The Licensee shall record the NRF, Turners Falls Dam discharge, Station No. 1 discharge, Cabot Station discharge and total Turners Falls Project discharge (below the Cabot Station tailrace) at the top of each hour. Allowable deviations in both the Cabot Station Ramping Rate and Flow Stabilization below Cabot Station requirements shall be recorded. At the top of each hour, the Licensee shall record the change in Cabot Station discharge from the previous hour to determine if any deviation has occurred from the agreed upon Cabot Station Ramping Rate. In addition, the NRF (as detailed in paragraph (b) of the "Operational Regime" section) shall be compared with the recorded total Turners Falls Project discharge in a given hour to identify if a Flow Stabilization below Cabot Station deviation occurred over the past hour. Any deviation of either the Cabot Station Ramping Rate or total Turners Falls Project discharge within the hour shall be counted in one-hour increments.

- Categorize Allowable Deviations: When an allowable deviation is identified it shall be categorized as either Regulatory, as detailed in paragraph (b) of Article A160, NRF Allowance, as detailed in paragraph (d) of the Article A190 or Discretionary, as detailed in paragraph (a) of Article A160.

The Licensee shall develop the Plan after consultation with, and upon written concurrence from MassDEP, MDFW, NMFS, and USFWS.

The Licensee shall include with the Plan documentation of consultation after it has been prepared and provided to MassDEP, MDFW, NMFS, and USFWS. The Licensee shall provide a minimum of 30 days for MassDEP, MDFW, NMFS, and USFWS to comment and to make recommendations before filing the Plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project specific information.

The Commission may not change the Plan. Implementation of the Plan shall not begin until the Licensee is notified by the Commission that the Plan is approved. Upon Commission approval, the Licensee shall implement the Plan, including any changes required by the Commission.

12. Flow Notification and Website (Proposed Article A210, as amended)

Within 1 year of license issuance, the Licensee shall provide the following information year-round on a publicly available website:

(a) On an hourly basis, the Turners Falls Impoundment water elevation, as measured at the Turners Falls Dam, the Turners Falls Dam total discharge, and the Station No. 1 discharge.

(b) On an hourly basis, the anticipated Turners Falls Dam total discharge and the anticipated Station No. 1 discharge for a 12-hour window into the future. Should the Licensee deviate from passing the 12-hour previous NRF from December 1 to May 31 or the 12-hour average NRF from June 1 to November 30, it shall post the revised flows (in the 12-hour look ahead window) to the website as soon as practicable within one hour after they are known. Should the Licensee of the Vernon Hydroelectric Project provide the Licensee with flow data more than 12 hours in advance, the Licensee shall publish the information sooner within one hour of receipt of the flow data.

(c) Within Not less than one month prior to its annual power canal drawdown, the Licensee shall post on the website the starting and ending time/date of the any drawdown, which shall last at least 4 days. Not less than one week prior to its annual power canal drawdown, the Licensee shall post on the website the starting and ending time/date of any drawdown, of any duration.

Throughout the duration of the every canal drawdown, the NRF, as defined in Article A110, shall be maintained below the Turners Falls Dam.

76. Seldon Gary

February 23, 2025 at 12:20:38 PM
Because the Licensee seeks to use our public trust, there must be transparent presentation of real-time (d), and 12-hour window into the future(e) NMPS flow rates.
Similarly at f, water quality test

77. Seldon Gary

February 23, 2025 at 1:10:51 PM
In a similar fashion, add info from my new d, e, & f to theses

78. Seldon Gary

February 23, 2025 at 12:19:53 PM
Again, sooner, the Licensee wants to use our public trust, they must be quickly transparent.

79. Seldon Gary

February 23, 2025 at 1:13:58 PM
In a similar fashion, add info from my new d, e, & f to theses

80. Seldon Gary

February 10, 2025 at 9:05:04 PM
Special Condition #15 also has an exception note 1.
This may be unclear and need clarification.

81. Seldon Gary

January 28, 2025 at 4:32:19 PM
Does this need further clarity?
For instance, if the license is issued on 12/20/26, is 1/01/27 the first day of year one?

82. Seldon Gary

February 22, 2025 at 10:53:01 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

76 (d) On an hourly basis, 24/7, the Northfield Mountain Pumped Storage Project discharge/inflow in cfs, as measured where the tailrace meets the river, within the intake area.

(e) On an hourly basis, 24/7, the Northfield Mountain Pumped Storage Project anticipated discharge/inflow in cfs, where the tailrace meets the river, within the intake area, for a 12-hour window into the future.

(f) On a weekly basis, at a minimum, water quality test results taken to coincide with Northfield Mountain Pumped Storage Project's full range of discharge flows, where the tailrace meets the river, within the intake area, that are designed to be able to determine whether the ground up fish NMPS pushes into the River is or is not an effluent release that is in compliance with SWQS.

77 78 (gd) Quarterly reports provided by the end of the ~~second~~first month following each quarter that include data concerning:

- daily impoundment elevation fluctuations;
- average, median, highest, and lowest impoundment levels on a weekly and monthly basis; and
- discharges from the Turners Falls Dam, Station No. 1, and Cabot Station on a daily, weekly, and monthly basis.

79 (he) Annual summary report by February 1 of each year, which includes the preceding information, and delineates the timing, frequency, magnitude, and duration of TFI levels below 178.5 and above 184.

Northfield Mountain Project Operations

13. Project Operations (Proposed Article B100)

Upon license issuance, the Licensee shall:

(a) Operate the Northfield Mountain Pumped Storage Project in accordance with its existing agreement with the United States Army Corps of Engineers (USACE). This agreement, memorialized in the Reservoir and River Flow Management Procedures (1976), as it may be amended from time to time, governs how the Project will operate during flood conditions and coordinate its operations with the Licensee of the Turners Falls Hydroelectric Project (FERC No. 1889).

(b) Operate the Northfield Mountain Pumped Storage Project upper reservoir between elevation 1004.5 and 920.0 feet National Geodetic Vertical Datum of 1929 (NGVD29).

Turners Falls Project Fish Passage

14. Fish Passage Facilities and Consultation (Proposed Article A300)

The Licensee shall implement the following fish passage measures on the schedule specified. When due dates cited in this and other articles are in "years after license issuance," but for the exception noted at (g), this shall mean on the

80 appropriate date in the specified calendar year after license issuance, regardless of the quarter in which Page 63 of 117DRAFT-1-24-25

81 the license is issued. For example, "Year 1 after license issuance" begins on the first January 1 following license issuance.

Upstream Fish Passage

(a) construct a Spillway Lift at the Turners Falls Dam to be operational no later than April 1 of Year 9 after license issuance.

(b) rehabilitate the Gatehouse Trapping facility (sampling facility) to be operational no later than April 1 of Year 9 after license issuance.

(c) retire, either by removal or retaining in place, the Cabot Ladder and the power canal portions of the Gatehouse Ladder within 2 years after the Spillway Lift becomes operational.

(d) install and operate interim upstream eel passage in the vicinity of the existing Spillway Ladder within 1 year of license issuance and continue operating it until permanent upstream eel passage facilities are operational. The Licensee shall consult with and obtain written approval from MDFW, NMFS, and

82 USFWS on the location and design of the interim eelway(s).

83. Seldon Gary

February 22, 2025 at 10:53:37 PM

Again, move the decision making power away from the Licensee, to these agencies.

Are these the right agencies?

Anyone missing? FRCOG, Montague, Gill, Erving.

84. Seldon Gary

January 28, 2025 at 5:12:48 PM

First, are these timelines warranted?

Second, are they exceptions to the definition at the beginning of this Special Condition, on p.63 & p.64?

It seems that clarification is needed.

(e) conduct up to 2 years of eelway siting studies after the Spillway Lift becomes operational, using a similar methodology to relicensing Study 3.3.4 for both years. Based on the siting survey results, design, construct, operate, and maintain up to two permanent upstream eel passage facilities at the Turners Falls Project no later than 3 years after completing the final siting

83 survey. The Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS on the location of the two

permanent upstream eel passage facilities. The final eelway siting shall take into account the ability to maintain the eelway(s) in light of spillage conditions at the Turners Falls Project. The Licensee shall not be required to place any eelways at the foot of any active spillway structures.

Downstream Fish Passage

(f) Within 4 years¹ of license issuance, replace the existing Cabot Station trashrack structure with a new full depth trashrack with 1-inch clear spacing. The new trashracks shall have multiple openings for fish passage, including openings on the top and bottom of the water column. The Licensee shall attempt to maximize the hydraulic capacity of these openings within the constraints of the conveyance mechanisms. The Licensee shall base detailed design alternatives on the following conceptual design; however, the Parties will remain flexible on design alternatives as necessary to meet fish passage goals.

The new trashrack shall have multiple surface entrances including:

- a.) between Cabot Units 2 and 3;
- b.) between Cabot Units 4 and 5; and
- c.) at the right wall of the intake (looking downstream) at Cabot Unit 6.

The openings shall be 3-feet-wide by 2-feet-tall and shall connect to the existing trash trough located behind the racks. Each opening at the top of the trashrack shall have an approximate hydraulic capacity of 24 cfs, and the existing trash trough shall convey a total hydraulic capacity of approximately 72 cfs Page 64 of 117DRAFT-1-24-25

from these openings. The new trashrack shall have an additional entrance near the bottom at the left wall of the intake (looking downstream) at Unit 1. This entrance shall be approximately 3-feet- wide by 3-feet-tall and shall connect to a vertical pipe to safely convey fish to the existing trash trough or log sluice. This entrance shall be sized to provide a velocity that attracts fish to the bypass relative to the turbine intakes (approximately 5 feet-per-second). In addition to the entrances integral to the new trashrack structure, fish shall be conveyed via a new uniform acceleration weir (UAW) and log sluice. The log sluice shall be resurfaced to limit turbulence and injury to migrants. A steel panel (or equivalent) shall be provided below the UAW to exclude migrants from being delayed in the space below the UAW. Total flow from all downstream passage components at Cabot Station shall be 5% (685 cfs) of maximum hydraulic station capacity (13,728 cfs). The conveyance at each bypass entrance shall be determined during the design phase.

(g) Within 4 years¹ of license issuance, construct a ¾-inch clear-spaced bar rack at the entrance to the Station No. 1 branch canal.

¹Relative to the Cabot Intake Protection and Downstream Passage Conveyance and the Station No. 1

84 Bar Rack, the times cited shall be from license issuance based on the time needed to complete construction. The actual first year of operation of these two facilities will depend on when the license is issued. If the License is issued in quarter 1 (Q1, Jan 1-Mar 31) then these two facilities shall be operational no later than April 1 of Year 4 after license issuance; if it is issued in Q2 then these two facilities shall be operational no later than August 1 of Year 4 after license issuance; and if it is issued after Q2 then these two facilities shall be operational no later than April 1 of Year 5 after license issuance.

(h) Construct a plunge pool downstream of the Turners Falls Dam Bascule Gate No. 1 as part of the construction of the Spillway Lift, to be operational no later than April 1 of Year 9 after license issuance.

Consultation

85. Seldon Gary

February 7, 2025 at 2:09:04 PM

This is an EXISTING example of FL needing approval from, ...
This is how 'they all' should be.
DEP and the other agencies should have final say authority over FL.

86. Seldon Gary

February 22, 2025 at 10:54:08 PM

Are these the right agencies?
Anyone missing? FRCOG,
Montague, Gill, Erving,

87. Seldon Gary

February 22, 2025 at 10:54:27 PM

Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG,
Montague, Gill, Erving,

88. Seldon Gary

February 22, 2025 at 10:54:40 PM

Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG,
Montague, Gill, Erving,

89. Seldon Gary

February 22, 2025 at 10:55:31 PM

Again, move the decision making power away from the Licensee.

90. Seldon Gary

February 23, 2025 at 2:04:15 PM

MaDEP, STAND UP TO FERC.
Again, the Clean Water Act's 401 process requires the inclusion of the WQC, as written on the state level, to be part of any FERC granted License. Citizens, and the River need MaDEP to hold, not relinquish our rights to protect the River.

- 85 86** For any new fish passage facility, the Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS on the facility design and on operation and maintenance procedures. The Licensee shall
- 87** consult with and obtain written approval from MDFW, NMFS, and USFWS at the 30%, 60%, 90% and 100% design plan milestones. The
- 88** Licensee shall file the 100% design plans with the Commission, along with documentation of consultation and written approval with MDFW, NMFS, and USFWS. If any fish passage adaptive management measures
- 89** (AMMs) are implemented as discussed in Articles A320 and A330 and require facility design and operation and maintenance procedures, then the Licensee shall follow the same consultation and written approval process as
- 90** the initial fish passage build-out.
- The Commission may not change the design plans. Implementation of the design plans shall not begin until the Licensee is notified by the Commission that the design plans are approved. Upon Commission approval, the Licensee shall implement the design plans, including any changes required by the Commission.

15. Schedule of Initial Effectiveness Testing, Consultation Process on Effectiveness Testing Study Plans, and Fish Passage Performance Goals (Proposed Article A310)

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Schedule of Initial Effectiveness Testing

The Licensee shall complete construction of each fish passage facility, operate the fish passage facility for one season (shakedown year), and then conduct representative and quantitative fish passage effectiveness testing per the schedule below.

Operational/Shakedown**Initial Effectiveness Study Years****Facility****Date****and Locations to be Tested**

Cabot Rack and

Downstream Conveyance

Year 4 after license

issuance:

Station No. 1 Bar Rack Years 6-7, the Cabot Downstream

Fish Passage Structure and Station

No. 1 Rack shall be tested.

Year 4 after license

issuance:

Turners Falls Dam

Plunge

Pool

Year 9 (by April 1st) after

license issuance Years 10-11, the Turners Falls Plunge

Pool and Spillway Lift shall be tested.

Spillway Lift Year 9 (by April 1st) after

license issuance

Rehabilitate Gatehouse

Trapping Facility

(Sampling Facility)

Year 9 (by April 1st) after

license issuance

91. Seldon Gary

February 23, 2025 at 2:07:00 PM
Again, this seems messed up.
Which is it, this, or what it says at
the beginning of Special
Condition #14, on p.63 & p.64?

92. Seldon Gary

February 23, 2025 at 2:08:56 PM
Close loopholes. The fish
needing passage must be
prioritized over the Licensee

93. Seldon Gary

February 23, 2025 at 2:15:33 PM
Again, these seem messed up.
Which is it, this, or what it says at
the beginning of Special
Condition #14, on p.63 & p.64?
A lack of clarity can make it
easier for the 'most well heeled'
to take control.

94. Seldon Gary

February 22, 2025 at 10:27:46 PM
Again, move the decision making
power away from the Licensee,
to these agencies.
Are these the right agencies?
Anyone missing? FRCOG,
Montague, Gill, Erving,

Not Applicable

Retire Cabot Ladder and
Portions of Gatehouse
Ladder

No later than Year 11 after
license issuance (tied to
within 2 years after the
Spillway Lift becomes
operational).

Not Applicable

Permanent Eel Passage
Structure(s)

Year 13 after license
issuance

Year 14, the internal efficiency of the
permanent eel passage structure(s)

shall be tested.

~~Relative to the Cabot Intake Protection and Downstream Passage Conveyance and the Station No. 1-
Bar Rack, the times cited shall be from license issuance based on the time needed to complete~~

~~construction.~~ The actual first year of operation of these two facilities will depend on when the license is
issued. If the license is issued in quarter 1 (Q1, Jan 1-Mar 31) then these two facilities shall be
operational no later than April 1 of Year 4 after license issuance; if it is issued in Q2 then these two
facilities shall be operational no later than August 1 of Year 4 after license issuance; and if it is issued
after Q2 then these two facilities shall be operational no later than April 1 of Year 5 after license
issuance.

Consultation Process on Effectiveness Study Plans

For any initial fish passage effectiveness studies and any subsequent fish passage effectiveness studies
required after implementing any AMMs described in Article A320 and A330, the Licensee shall provide
the effectiveness study plans to MDFW, NMFS, and USFWS and request comments on the study plans
within 30 days. The Licensee shall consult MDFW, NMFS, and USFWS and obtain their approval on
the study plans before conducting the effectiveness studies. The Licensee shall file the effectiveness
study plans with the Commission, along with any consultation records.

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Fish Passage Performance Goals

The Licensee shall compare the effectiveness study results to the following fish passage performance
goals:

Downstream Passage

- 95% of juvenile American Shad arriving 500 meters upstream of the Turners Falls Dam
survive migration past the Turners Falls Project within 24 hours.
- 95% of adult American Shad arriving 1 kilometer upstream of the Turners Falls Dam survive
migration past the Turners Falls Project within 24 hours.
- 95% of American Eel arriving 1 kilometer upstream of the Turners Falls Dam survive
migration past the Turners Falls Project within 48 hours of a flow event. The definition of what
constitutes a flow event shall be determined by the Licensee in consultation with and upon written concurrence

from MDFW,

NMFS and USFWS during effectiveness study plan development.

The downstream passage at the Turners Falls Project is project wide and shall include all routes of
passage (e.g., spill, fish bypass, and turbine passage).

Upstream Passage

- 75% of adult American Shad arriving 500 meters below Cabot Station successfully pass into

95. Seldon Gary

February 22, 2025 at 10:30:14 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

96. Seldon Gary

February 22, 2025 at 10:56:14 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

97. Seldon Gary

February 22, 2025 at 10:56:39 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

98. Seldon Gary

February 22, 2025 at 10:56:51 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

99. Seldon Gary

February 22, 2025 at 10:57:04 PM
Again, move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving,

the Turners Falls Impoundment within 48 hours. The 75% passage efficiency for American Shad shall be based on the first 90% of the American Shad run. The effectiveness testing shall be conducted over the entire adult American Shad run, but the 75% passage efficiency goal shall be based on the first 90% of the run as determined by the Licensee as a *posteriori* analysis of run counts. The Licensee shall determine where and how run counts shall occur in consultation with and upon written concurrence from MDFW, NMFS and USFWS during effectiveness study plan development.

The Licensee, MDFW, NMFS and USFWS shall revisit whether the 75% passage efficiency goal is achievable or should be reduced, and whether the 48-hour time-to-pass goal is achievable or should be increased, after implementing the first (Tier 1) and second (Tier 2) round of AMMs as described in Article A330.

• An internal passage efficiency of 95% within the permanent passage structure(s) for American Eel. The 95% internal efficiency assumes it is possible for the Licensee to successfully tag up-

migrating eels. The Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS to determine on the appropriate

size American eel, based on available technology, to test the internal efficiency.

16. Downstream Fish Passage- Initial Effectiveness Studies, Adaptive Management Measures and Subsequent Effectiveness Studies (Proposed Article A320, as amended)

Initial Effectiveness Studies- Years 6 and 7

The Licensee shall conduct initial effectiveness testing in Years 6 and 7 (see Article 310) to evaluate the fish passage survival and time-to-pass of the newly constructed Station No. 1 bar rack and Cabot Rack and Conveyance Structure and compare the findings at individual components (e.g., Cabot Station and Station No. 1) to the performance goals in Article 310. The Licensee shall develop reports by February 1 of Years 7 and 8 for adult American Shad and by April 1 of Years 7 and 8 for juvenile American Shad and adult American Eel summarizing the survival study findings and provide it to MDFW, NMFS, and USFWS. The Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS on the

effectiveness study results and

Page 67 of 117DRAFT-1-24-25

determine what, if any, adaptive management measures (AMMs) may be implemented from the table below. The Licensee shall target any AMMs to those locations where fish passage performance goals are not achieved. The Licensee shall file a report with the Commission to include the effectiveness testing report and documentation of any AMMs agreed to by the Licensee, MDFW, NMFS, and USFWS, along with any consultation records. If warranted, the Licensee shall consult with and obtain written

approval from MDFW, NMFS,

and USFWS on when to implement the Round 1 AMMs at Station No. 1 and/or Cabot Station.

Effectiveness Testing of Round 1 AMMs at Station No. 1 and/or Cabot Station and Initial Effectiveness Testing at Turners Falls Dam Plunge Pool- Years 10 and 11

The Licensee shall conduct Round 1 AMM effectiveness testing at Station No. 1 and/or Cabot Station and initial effectiveness testing of the Turners Falls Dam plunge pool in Years 10 and 11. The Licensee shall:

• Compare the effectiveness study results to the performance goals in Article 310.
• Provide the effectiveness study report to MDFW, NMFS, and USFWS by February 1 of Years 11 and 12 for adult American Shad and by April 1 of Years 11 and 12 for juvenile American Shad and adult American Eel summarizing the survival study findings.

• Consult with and obtain written approval from MDFW, NMFS, and USFWS to determine what, if any AMMs may be implemented from the table below and target AMMs to those locations where passage performance goals are not achieved.

• File the effectiveness study report and documentation of any AMMs with the Commission.

100. Seldon Gary
February 23, 2025 at 2:19:04 PM
Close loopholes.
101. Seldon Gary
February 22, 2025 at 10:57:32 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?
102. Seldon Gary
February 22, 2025 at 10:58:33 PM
Again, move the decision making power away from the
103. Seldon Gary
February 23, 2025 at 2:19:33 PM
Close loopholes.
104. Seldon Gary
February 22, 2025 at 10:59:46 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?
105. Seldon Gary
February 22, 2025 at 11:00:10 PM
Again, move the decision making power away from the
106. Seldon Gary
February 23, 2025 at 2:22:45 PM
WHAT!!
So DEP's including it to acknowledge it, and doesn't believe it's necessary to comply with the SWQS because it's not inconsistent with meeting the SWQS, but it's not it is necessary to comply with the SWQS.

If FirstLight will not comply, DEP
107. Seldon Gary
February 23, 2025 at 2:23:17 PM
Which is it, this or the interpretation that the Licensee must comply with the SWQS, applied elsewhere in the Certificate?
Always COMPLY with the SWQS in this Certificate!
108. Seldon Gary
February 23, 2025 at 2:35:10 PM
Again, this "is not inconsistent" language is not adequate. Please maintain consistency throughout the Certificate with the statement on p.6: "The applicant for a WQC is responsible for providing MassDEP sufficient information to demonstrate compliance with the SWQS"

- 100 - If warranted, the Licensee shall consult with and obtain written approval from MDFW, NMFS and USFWS on when to implement any Round 2 AMMs at Station No. 1 and/or Cabot Station and Round 1 AMMs at the Turners Falls Dam plunge pool.
Effectiveness Testing of Round 2 AMMs at Station No. 1 and/or Cabot Station and Round 1 AMMs at Turners Falls Dam Plunge Pool- Years 14 and 15
The Licensee shall conduct Round 2 AMM effectiveness testing at Station No. 1 and/or Cabot Station and Round 1 AMMs at the Turners Falls Dam plunge pool in Years 14 and 15. The Licensee shall follow the same consultations and written approval steps bulleted above; however, the Licensee shall provide the effectiveness study report to MDFW, NMFS, and USFWS by February 1 of Years 15 and 16 for adult American Shad and by April 1 of Years 15 and 16 for juvenile American Shad and adult American Eel.
- 102 - If warranted, the Licensee shall consult with and obtain written approval from MDFW, NMFS and USFWS on when to implement any Round 3 AMMs at Station No. 1 and/or Cabot Station and Round 2 AMMs at the Turners Falls Dam plunge pool.
Effectiveness Testing of Round 3 AMMs at Station No. 1 and/or Cabot Station and Round 2 AMMs at Turners Falls Dam Plunge Pool- Years 18 and 19
The Licensee shall conduct Round 3 AMM effectiveness testing at Station No. 1 and/or Cabot Station and Round 2 AMMs at the Turners Falls Dam plunge pool in Years 18 and 19. The Licensee shall follow the same consultations and written approval steps bulleted above however, the Licensee shall provide the effectiveness study report to MDFW, NMFS, and USFWS by February 1 of Years 19 and 20 for adult American Shad and by April 1 of Years 19 and 20 for juvenile American Shad and adult American Eel.
Page 68 of 117DRAFT-1-24-25
- 103 - While MassDEP includes the following provision from the proposed articles to acknowledge it, MassDEP does not believe it is necessary to comply with the SWQS: MDFW, NMFS, and USFWS have agreed, consistent with the terms of the Flows and Fish Passage Settlement Agreement (March 2023), not to exercise any reserved or other regulatory authority regarding downstream passage to request or require any AMMs other than those listed in the table below for the first 25 years of the license. In addition, MDFW, NMFS, and USFWS have agreed, consistent with the terms of the settlement agreement, that they will not request or require Cabot Station shutdowns over the life of the license. MassDEP adds that the provision is not inconsistent with meeting the SWQS.
- 105 - **Downstream Adaptive Management Measures**
Adaptive Management Measure (if needed) Turners Falls Dam
• Modify the bascule gate setting(s) and resultant spill (rate, location).
Station No. 1
Timing
• Install a behavioral barrier.
Cabot Station
• Modify the downstream passage conveyance design to reduce impact velocities and shear stresses (e.g., pump-back system; gradient reduction; piping, lining);
• Modify the downstream passage conveyance design to increase water depth;
• Modify the area of flow convergences of the trash trough, Uniform Acceleration Weir, eel pipe, and sluiceway;
Initial Effectiveness Testing at
Cabot Station and Station No. 1:
- 106 -
- 107 -
- 108 -
- 109 -

Always COMPLY with the
SWQS in this Certificate!

109. **Seldon Gary**
February 10, 2025 at 9:51:53 PM
This table, with it's "(if needed)"
loopholes, and being "not
inconsistent with meeting the
SWQS" rather than complying
with the SWQS, seems highly
suspect.

110. Seldon Gary

February 22, 2025 at 11:01:02 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

111. Seldon Gary

February 23, 2025 at 3:12:07 PM
Close loopholes.

112. Seldon Gary

February 23, 2025 at 2:45:15 PM
Close loopholes.

113. Seldon Gary

February 22, 2025 at 11:01:32 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

Years 6-7.

Initial Effectiveness Testing at Turners Falls Dam Plunge Pool and Round 1 Effectiveness Testing for any AMMs implemented at Cabot Station and/or Station No. 1 (if needed): **Years 10-11.**

Round 2 AMM Effectiveness Testing at Cabot Station and/or Station No. 1 (if needed) and Round 1 Effectiveness Testing at Turners Falls Dam Plunge Pool (if needed):

Years 14-15

Round 3 AMM Effectiveness Testing at Cabot Station and/or Station No. 1 (if needed) and Round 2 Effectiveness

Adaptive Management Measure (if needed) Timing

- Modify the area of flow convergence of the sluiceway and the receiving waters in the Connecticut River (*e.g.*, adjustable lip, velocity control, and plunge pool depth)

Testing at Turners Falls Dam Plunge

Pool (if needed): **Years 18-19**

17. Upstream Fish Passage Initial Effectiveness Studies, Adaptive Management Measures and Subsequent Effectiveness Testing (Proposed Article A330, as amended)***Initial Effectiveness Testing of Adult American Shad- Years 10 and 11***

The Licensee shall conduct initial effectiveness testing in Years 10 and 11 (see Article 310) to evaluate upstream fish passage efficiency and time-to-pass at the Cabot Station tailrace, Rawson Island, Station No. 1 tailrace, and at the Spillway Lift through the Gatehouse Ladder exit and compare the findings to Page 69 of 117DRAFT-1-24-25

the performance goals in Article 310. The Licensee shall develop a report by February 1 of Years 11 and 12 for adult American Shad summarizing the effectiveness study findings and provide it to MDFW, NMFS, and USFWS. The Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS on the effectiveness

study results and determine what, if any, Tier 1 adaptive management measures (AMMs) from the table below may will be implemented.

The Licensee's implementation of Tier 1 AMMs, ~~if warranted,~~ shall be informed by the initial effectiveness testing results. While the overall passage efficiency goal is 75% in 48 hours, there are four locations (or nodes) of interest, where the Licensee can provide enhancements as part of the AMMs for upstream passage efficiency including Cabot Station, Rawson Island, Station No. 1 and the Spillway Lift. If the individual passage efficiency at all four locations is 90% or higher, or if the overall passage efficiency goals are met, no Tier 1 AMMs will be implemented. If the individual passage efficiency at any of the four locations is less than 90%, the Licensee shall target Tier 1 enhancements to achieve an individual location passage efficiency of 90% or higher. However, if the Licensee obtains written approval from;

MDFW, NFMS, and

USFWS agree that improvements can be made at other nodes that would improve the overall passage efficiency a comparable amount as an enhancement to achieve an individual location/node to at least 90%, then that enhancement can be implemented.

114. Seldon Gary

February 23, 2025 at 2:45:52 PM
Close loopholes.

115. Seldon Gary

February 23, 2025 at 3:18:34 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

116. Seldon Gary

February 22, 2025 at 11:01:50 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

117. Seldon Gary

February 23, 2025 at 2:46:08 PM
Close loopholes.

118. Seldon Gary

February 22, 2025 at 11:02:06 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

119. Seldon Gary

February 23, 2025 at 3:27:44 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

120. Seldon Gary

February 23, 2025 at 3:28:12 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

114 - If warranted, ~~the~~ The Licensee shall consult with and obtain written approval from MDFW, NMFS and USFWS on when to implement the Tier 1 AMMs.

Tier 1 Adaptive Management Measures Effectiveness Testing of Adult American Shad- Years 13 and 14

following:

The Licensee shall conduct Tier 1 AMM effectiveness testing in Years 13 and 14 and conduct the

- The Licensee shall compare the effectiveness study results to the performance goals in Article 310.

- The Licensee shall provide the effectiveness study report to MDFW, NMFS and USFWS by February 1 of Years 14 and 15.

- At the election of the Licensee, the Licensee may provide the effectiveness study report to an Independent Peer Review Panel (IPRP) of experts to evaluate the study results. The IPRP shall consist of one member selected by the Licensee, one member selected collectively by MDFW, NMFS, and USFWS, and one member selected jointly by the Licensee, MDFW, NMFS, and USFWS. After the IPRP's review of the effectiveness study findings, the IPRP shall evaluate the ability to achieve the upstream fish passage performance goals in Article 310 and provide a summary report of its findings to the Licensee, MDFW, NMFS, and USFWS within 3 months of receiving the effectiveness study report.

- If the 75% passage efficiency/48-hour time-to-pass performance goal is not met, the Licensee shall consult MDFW, NMFS, and USFWS to determine whether the 75% passage efficiency goal is achievable or should be reduced, and/or the 48-hour time-to-pass goal is achievable or should be increased. Any modifications to the 75% passage efficiency/48-hour time-to-pass must be agreed to by the Licensee, MDFW, NMFS, and USFWS.

116 - The Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS to determine what, if any, AMMs will be implemented.

- The Licensee shall file the effectiveness study report and documentation of any AMMs with

Page 70 of 117 DRAFT-1-24-25

the Commission.

117 - If warranted, ~~the~~ The Licensee shall consult with and obtain written approval from MDFW, NMFS and USFWS on when to implement either the remaining Tier 1 AMMs and/or Tier 2 AMMs.

Tier 1 and/or Tier 2 Adaptive Management Measures Effectiveness Testing of Adult American Shad- Years 18 and 19

The Licensee shall conduct any Tier 1 and/or Tier 2 AMM effectiveness testing in Years 18 and 19 and conduct the following:

- The Licensee shall compare the effectiveness study results to the performance goals in Article 310.

- The Licensee shall provide the effectiveness study report to MDFW, NMFS and USFWS by February 1 of Years 19 and 20.

- The Licensee shall file the effectiveness study report and documentation of any AMMs with the Commission.

119 - If, after the Licensee implements additional Tier 1 AMMs and/or Tier 2 AMMs, the overall passage efficiency is greater than 65% or a lesser number as agreed to by the Licensee, MDFW, NMFS, and USFWS, and the overall time-to-pass is less than 60 hours or a higher number as agreed by the same group, then MDFW, NMFS, and USFWS will not exercise any reserved or other regulatory authority to require additional upstream fish passage measures or operational changes. While MassDEP includes the preceding sentence, mostly from the proposed articles to acknowledge it, MassDEP does not believe it is necessary to comply with the SWQS. It is not inconsistent with meeting the SWQS.

121. Seldon Gary

February 13, 2025 at 11:12:01 PM

Again, which is it, this or the interpretation that the Licensee must comply with the SWQS, applied elsewhere in the Certificate?

Always COMPLY with the SWQS in this Certificate!

122. Seldon Gary

January 28, 2025 at 10:03:05 PM

Again, this "is not inconsistent" language is not adequate.

Please maintain consistency throughout the Certificate with the statement on p.6: "The applicant for a WQC is responsible for providing MassDEP sufficient information to demonstrate compliance with the SWQS"

Always COMPLY with the SWQS in this Certificate!

121

While MassDEP includes the following provision from the proposed articles to acknowledge it, MassDEP does not believe it is necessary to comply with the SWQS: MDFW, NMFS, and USFWS have agreed, consistent with the terms of the Flows and Fish Passage Settlement Agreement (March 2023), not to exercise any reserved or other regulatory authority regarding upstream passage to request or require any AMMs other than those listed in the table below for the first 25 years of the license. In addition, MDFW, NMFS, and USFWS have agreed, consistent with the terms of the settlement agreement, that they will not request or require Cabot Station shutdowns or a lift at Cabot Station over the life of the license. MassDEP adds that the provision is not inconsistent with meeting the SWQS.

122

Effectiveness Testing of Juvenile American Eel- Year 14

The Licensee shall conduct effectiveness testing in Year 14 to evaluate the internal efficiency of the permanent eelway structure(s) and compare the findings to the performance goals in Article 310.

Upstream Adaptive Management Measures- Tier 1 and 2

Adaptive Management Measure (if needed) Schedule

Tier 1

Cabot Tailrace and Rawson Island Nodes

• Upon license issuance, the Total Minimum Bypass Flow below Station No. 1 from June 1 to June 15 is 4,500 cfs (see Article A120). This AMM includes increasing the Total Minimum Bypass Flow below Station No. 1 from June 1 to June 15 to

Years of

Initial

Effectiveness

Page 71 of 117DRAFT-1-24-25

6,500 cfs until 90% of the American Shad run enter the Spillway Lift, upon which

the Total Minimum Bypass Flow below Station No. 1 will revert to 4,500 cfs.

If this adaptive management measure is enacted and after two years of effectiveness testing, it improves the fish passage efficiency and time-to-pass goals, this change may be implemented throughout the remainder of the license, subject to other adaptive management measures. However, even after this change, the 6,500 cfs shall revert to 4,500 cfs when 90% of the adult American Shad run enter the Spillway Lift before or within the June 1 to 15 period. The indicator as to when the 90% of the adult American Shad run passes shall be determined using a predictive model to be developed by the Licensee in consultation with MDFW, NMFS, and USFWS. The Licensee shall file with the Commission the predictive model results within 6 months of license issuance and it shall be updated and/or refined with data collected over intervening years.

If this change is implemented, from June 1 to June 15, the Minimum Flow below the Turners Falls Dam (Article A110) must be 4,290 cfs or the NRF, whichever is less; and the Total Minimum Bypass Flow below Station No. 1 (Article A120) must be 6,500 cfs or the NRF, whichever is less.

Station No. 1 Node

Testing:

Years 10-11

Time Needed
to Implement

AMM(s):

Year 0 since

all Tier 1

AMMs are

operational

Years of Post

123. Seldon Gary

February 22, 2025 at 11:02:22 PM

Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

AMM
Effectiveness
Testing:

Years 13-14

- Shift the distribution of the Total Minimum Bypass Flow below Station No. 1 (Article A120) to increase the Total Minimum Flow below Turners Falls Dam (Article A110) from April 1 to June 30 until 90% of the adult American Shad run enter the Spillway Lift, upon which it shall revert back to the flow requirements in Articles A110 and A120. The Total Minimum Bypass Flow below Station No. 1 remains the same from April 1 to June 30 as described in Article A120.

Spillway Lift

- Adjust the new plunge pool release and/or bascule gate operation and/or,
- Adjust the new fish lift attraction water and entrance conditions and/or,
- Adjust the timing and frequency of lift operations and/or;
- Adjust the entrance gate.

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Adaptive Management Measure (if needed) Schedule**Tier 2****Cabot Tailrace Node**

- Install a behavioral barrier near the Cabot Station tailrace to guide fish upstream for passage at the Turners Falls Dam. If this AMM is implemented, then the Total Minimum Bypass Flow below Station No. 1 (Article A120) shall be reduced from 6,500 cfs to 4,500 cfs (Tier 1 AMM) from June 1 to June 15 for the period of testing the Tier 2 measures. At the end of Tier 2 testing (and provided that the 6,500 cfs extension is not needed to significantly improve passage efficiency or time-to-pass at Rawson Island) either the increased flow of 6,500 cfs (June 1 to June 15) shall be implemented or the behavioral barrier but not both unless it is demonstrated that both are needed to make a substantial improvement in passage efficiency or time-to-pass.

Rawson Island Node

Time Needed

to Implement

AMM(s):

Year 15-16

Shakedown:

Year 17

- If it is determined that the river channel adjacent to Rawson Island is inhibiting upstream fish passage, then constructing a zone of passage is an AMM. Prior to conducting any work associated with this AMM, the Licensee shall consult with and obtain written approval from

123

MDFW,

NMFS, USFWS, recreational boating and Tribal interests of The Nolumbeka Project/Tribal Coalition and the Massachusetts

Natural Heritage and Endangered Species Program (NHESP) on the design of the zone of passage. If the zone of passage is constructed, then the Total Minimum Bypass Flow below Station No. 1 shall be reduced from 6,500 cfs to 4,500 cfs (Tier 1 AMM) from June 1 to June 15 for the period of testing the Tier 2 measures. At the end of Tier 2 testing (and provided that the 6,500 cfs extension is not needed to significantly improve passage efficiency or time-to-pass at Rawson Island) the 6,500 cfs shall be reduced back to 4,500 cfs.

Station No. 1 Node

Years of Post

124. Seldon Gary

February 23, 2025 at 3:39:49 PM
 Move the decision making
 power away from the Licensee,
 to these agencies.
 Are these the right agencies?
 Anyone missing? FRCOG,
 Montague, Gill, Erving,
 Northfield?

AMM
 Effectiveness
 Testing: **Years**
18-19

- Install a behavioral barrier near the Station No. 1 tailrace to guide fish upstream for passage at the Turners Falls Dam. If this AMM is implemented, then the Turners Falls Dam Spill/Sum of Fall River, Turners Falls Hydro, LLC, Milton Hilton, LLL and Station No. 1 flow split shall be returned to the 67%/33%, respectively, from April 1 to June 30. At the end of Tier 2 testing, either the increased Turners Falls Dam Minimum Flow component of the flow split used in Tier 1 shall be implemented or the behavioral barrier but not both unless it is demonstrated that both are needed to make a substantial improvement in passage efficiency or time to pass.

Turners Falls Dam/Fish Lift Node

- Internal structural modifications to improve hydraulics for fish movement, as necessary.

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18. Fishway Operating Periods¹ (Proposed Article A340)

The Licensee shall operate the fishways during the following periods:

Upstream eel passage Upstream anadromous Downstream passage May 1 to November 15

April 4 to July 15

April 4 to November 15

124

¹Future refinement of the timing on an annual or permanent basis may be made by the MDFW, NMFS, and USFWS based on new information and after consultation with, but not necessarily with the agreement of the Licensee.

19. Fish Passage Facilities Operation and Maintenance Plan (Proposed Article A350)

The Licensee shall develop and implement a Fish Passage Facilities Operations and Maintenance Plan (FOMP). The FOMP shall detail how and when the fishways will be operated and describe routine maintenance activities that shall occur both during and outside of the fish passage season. The FOMP shall include a provision to provide annual fishway Operation and Maintenance (O&M) reports that summarize the status of the fish passage facilities, identify needed repairs or equipment replacement, etc. The O&M report shall be submitted to the MDFW, NMFS, and USFWS by January 31 annually. The FOMP shall be developed in consultation with and require approval by the MDFW, NMFS, and USFWS prior to submitting the final FOMP to the FERC for approval.

The FOMP shall be completed no later than 6 months after license issuance for the interim upstream eel passage which shall be placed into service within 1 year of license issuance per Article A300, and for existing fish passage facilities (*i.e.*, Cabot downstream fish bypass; Cabot Ladder; Spillway Ladder; and Gatehouse Ladder). Thereafter, the same FOMP shall be amended by the Licensee within 6 months prior to the following:

- Any fish passage structures are placed into service, as outlined in the schedule in Article A300;
 - Any AMM's are placed into service, as outlined in the schedule in Articles A320 and A330;
- and,

- Any operational or facilities modifications resulting from new information obtained from operation of the fish passage facilities pursuant to the annual O&M reports.

FOMP provisions dealing with facilities that are decommissioned over the term of the license may be dropped from revisions of the FOMP after decommissioning.

Northfield Mountain Project Fish Passage

20. Fish Intake Protection and Consultation (Proposed Condition B200)

Intake Protection

The Licensee shall install a barrier net in front of the Northfield Mountain tailrace/intake, having 3/8-inch mesh on the top and 3/4-inch mesh on the bottom. The barrier net design shall be based on the

125. Seldon Gary

February 22, 2025 at 10:30:36 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

126. Seldon Gary

February 10, 2025 at 10:23:47 PM
What about the rest of the year?

127. Seldon Gary

February 23, 2025 at 3:42:17 PM
More years of fish protection.

128. Seldon Gary

February 23, 2025 at 3:48:36 PM
Again, this is an EXISTING example of FL needing approval from, ...
This is how 'they all' should be. DEP and the other agencies should have final say authority over FL.
The people, through DEP with this Certificate, need assurance that the process of determining terms for use of the public trust resource are not dominated by a well heeled licensee.

129. Seldon Gary

February 23, 2025 at 3:49:38 PM
Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

130. Seldon Gary

February 22, 2025 at 11:02:38 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

131. Seldon Gary

February 23, 2025 at 3:50:55 PM
MaDEP, STAND UP TO FERC. Again, the Clean Water Act's 401 process requires the inclusion of the WQC, as written on the state level, to be part of any FERC granted License. Citizens, and the River need MaDEP to hold, not relinquish our rights to protect the River.

132. Seldon Gary

February 23, 2025 at 3:52:50 PM
Again, this is an EXISTING example of FL needing approval from, ...
This is how 'they all' should be. DEP and the other agencies should have final say authority over FL.
The people, through DEP with this Certificate, need assurance

conceptual design in the Amended Final License Application filed with the Commission in December 2020, as modified through consultation with and upon written concurrence from MDFW, NMFS, and USFWS, from June 1 to November

15 to protect out-migrating American Shad and adult American Eel, and shall be operational no later than June 1 of Year 53 after license issuance.

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Consultation

The Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS on the barrier net design and on operation and maintenance procedures. The Licensee shall consult with and obtain written approval from MDFW, NMFS, and

USFWS at the 30%, 60%, 90% and 100% design plan milestones. The Licensee shall file the 100% design plans with the Commission, along with documentation of consultation with MDFW, NMFS, and USFWS.

The Commission reserves the right to may not require any changes to the design plans. Implementation of the design plans must not begin until the Licensee is notified by the Commission that the design plans are approved. Upon Commission approval, the Licensee shall implement the design plans, including any changes required by the Commission.

21. Initial Intake Protection Effectiveness Testing and Fish Passage Performance Goals (Article B210, as amended)**Initial Effectiveness Testing**

The Licensee shall complete construction of the Northfield Mountain barrier net, operate the barrier net for one season (shakedown year), and conduct representative and quantitative effectiveness testing in Years 7 and 8 to evaluate the downstream fish passage survival and time-to-pass compared to the performance goals below.

Consultation Process on Effectiveness Study Plans

For any initial fish passage effectiveness studies and any subsequent fish passage effectiveness studies required after implementing any AMMs described in Article B220, the Licensee shall provide the effectiveness study plans to MDFW, NMFS, and USFWS and request comments on the study plans within 30 days. The Licensee shall consult with MDFW, NMFS, and USFWS and obtain their approval on the study plans before conducting the effectiveness study. The Licensee shall file the effectiveness study plans with the Commission, along with any consultation records.

Fish Passage Performance Goals

The Licensee shall compare the effectiveness study results to the following fish passage performance goals:

- 95% of juvenile American Shad arriving 500 meters upstream of the Northfield Mountain Pumped Storage Project tailrace survive migration past the Northfield Mountain Pumped Storage Project tailrace within 24 hours.
- 95% of adult American Shad arriving 1 kilometer upstream of the Northfield Mountain Pumped Storage Project tailrace survive migration past the Northfield Mountain Pumped Storage Project tailrace within 24 hours.
- 95% of American Eel arriving 1 kilometer upstream of the Northfield Mountain Pumped Storage Project tailrace survive migration past the Northfield Mountain Pumped Storage Project tailrace within 48 hours of a flow event. The definition of what constitutes a flow event

shall be determined by the Licensee in consultation with and upon written concurrence from MDFW, NMFS, and USFWS during effectiveness study plan development.

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22. Downstream Fish Passage- Initial Effectiveness Studies, Adaptive Management Measures and Subsequent Effectiveness Studies (Proposed Article B220, as amended)

that the process of determining terms for use of the public trust resource are not dominated by a well heeled licensee.

133. [Seldon Gary](#)

February 23, 2025 at 3:53:20 PM

Are these the right agencies?

Anyone missing? FRCOG,

Montague, Gill, Erving,

Northfield?

134. [Seldon Gary](#)

February 22, 2025 at 10:30:58 PM

Again, move the decision

making power away from the

Licensee, to these agencies.

Are these the right agencies?

Anyone missing? FRCOG,

Montague, Gill, Erving,

Northfield?

135. Seldon Gary
February 22, 2025 at 10:31:11 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?
136. Seldon Gary
February 23, 2025 at 3:53:59 PM
Close loopholes.
137. Seldon Gary
February 22, 2025 at 10:31:28 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?
138. Seldon Gary
February 22, 2025 at 11:03:16 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?
139. Seldon Gary
February 23, 2025 at 3:54:19 PM
Close loopholes.
140. Seldon Gary
February 22, 2025 at 11:03:51 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?
141. Seldon Gary
February 22, 2025 at 11:04:43 PM
Again, move the decision making power away from the
142. Seldon Gary
February 23, 2025 at 4:04:47 PM
Again, which is it, this or the interpretation that the Licensee must comply with the SWQS, applied elsewhere in the Certificate?
Always COMPLY with the SWQS in this Certificate!
143. Seldon Gary
February 23, 2025 at 4:03:54 PM
Again, this "is not inconsistent" language is not adequate. Please maintain consistency throughout the Certificate with the statement on p.6: "The applicant for a WQC is responsible for providing MassDEP sufficient information to demonstrate compliance with

Initial Effectiveness Studies- Years 7 and 8

The Licensee shall conduct initial effectiveness testing in Years 7 and 8 (Article B210) to evaluate the fish passage survival and time-to-pass of the newly constructed barrier net and compare the findings to the performance goals in Article B210. The Licensee shall develop a report by February 1 of Years 8 and 9 for adult American Shad and by April 1 of Years 8 and 9 for juvenile American Shad and adult American Eel summarizing the survival study findings and provide it to MDFW, NMFS, and USFWS.

- 135 The Licensee shall consult with and obtain written approval from MDFW, NMFS, and USFWS on the effectiveness study results and determine what, if any, adaptive managements measures (AMMs) may be implemented from the table below. The Licensee shall file a report with the Commission to include the effectiveness testing report and documentation of any AMMs agreed to by the Licensee, MDFW, NMFS, and USFWS, along with any consultation records. ~~If warranted,~~ The Licensee shall consult with and obtain written approval from MDFW, NMFS and USFWS on when to implement any Round 1 AMMs.

Effectiveness Testing of Round 1 AMMs - Years 10 and 11

The Licensee shall conduct Round 1 AMM effectiveness testing in Years 10 and 11. The Licensee shall:

- Compare the effectiveness study results to the performance goals in Article B210.
- Provide the effectiveness study report to MDFW, NMFS, and USFWS by February 1 of Years 15 and 16 for adult American Shad and by April 1 of Years 11 and 12 for juvenile American Shad and adult American Eel.

- 138 • Consult with and obtain written approval from MDFW, NMFS, and USFWS to determine what, if any AMMs may be implemented from the table below.
- File the effectiveness study report and documentation of any AMMs with the Commission.
- 139 - ~~If warranted,~~ The Licensee shall consult with and obtain written approval from MDFW, NMFS and USFWS on when to implement any Round 2 AMMs.

Effectiveness Testing of Round 2 AMMs - Years 14 and 15

- 141 The Licensee shall conduct Round 2 AMM effectiveness testing in Years 14 and 15. The Licensee shall follow the same consultations and written approval steps bulleted above; however, the Licensee shall provide the effectiveness study report to MDFW, NMFS, and USFWS by February 1 of Years 15 and 16 for adult American Shad and by April 1 of Years 15 and 16 for juvenile American Shad and adult American Eel.
- 142 While MassDEP includes the following provision from the proposed articles to acknowledge it, MassDEP does not believe it is necessary to comply with the SWQS: MFW, NMFS, and USFWS have agreed, consistent with the terms of the Flows and Fish Passage Settlement Agreement (March 2023), not to exercise any reserved or other regulatory authority regarding passage to request or require any AMMs other than those listed in the table below for the first 25 years of the license. In addition, they have agreed, consistent with the settlement agreement, not to request or require pumping restrictions at any time over the life of the license. MassDEP adds that the preceding provision is not inconsistent with the SWQS.
- 143

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Downstream Adaptive Management Measures

Adaptive Management Measure (if needed) Timing

Northfield Mountain Intake/Tailrace

- Alter the arrangement and size of the net panels (*e.g.*, extend depth of the smaller panels).
- Improve maintenance measures for the net.

Initial Effectiveness Testing of

Barrier Net: **Years 7-8.**

Round 1 AMM Effectiveness Testing

the SWQS”
Always COMPLY with the
SWQS in this Certificate!

144. Seldon Gary

February 23, 2025 at 4:07:45 PM
Move the decision making power away from the Licensee, to these agencies.
Are these the right agencies?
Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

145. Seldon Gary

February 22, 2025 at 10:32:20 PM
Again, move the decision making power away from the Licensee. Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

146. Seldon Gary

February 11, 2025 at 12:17:03 PM
This is a large area. Maybe it should be made more specific? Close loopholes.

147. Seldon Gary

February 23, 2025 at 4:10:56 PM
This is an EXISTING example of FL needing approval from, ...
This is how 'they all' should be. DEP and the other agencies should have final say authority over FL.
The people, through DEP with this Certificate, need assurance that the process of determining terms for use of the public trust resource are not dominated by a well heeled licensee.

(if needed): **Years 10-11**

Round 2 AMM Effectiveness Testing

(if needed): **Years 14-15**

23. Fishway Operating Periods¹ (Proposed Article B230)

The Licensee shall operate the barrier net for downstream passage from June 1 to November 15.

¹Future refinement of the timing may be made by the MDFW, NMFS, and USFWS based on new information and after consultation with, but not necessarily with the agreement of the Licensee.

24. Fish Passage Facility Operation and Maintenance Plan for Barrier Net (Proposed Article B240)

The Licensee shall develop and implement a Fish Passage Facilities Operations and Maintenance Plan (FOMP) for the barrier net. The FOMP shall detail how and when the barrier net will be operated and describe routine maintenance activities that will occur both during and outside of the downstream fish passage season. The FOMP will include a provision to provide annual fishway Operation and Maintenance (O&M) reports that summarize the status of the barrier net, identify needed repairs or equipment replacement, etc. The O&M report shall be submitted to the MDFW, NMFS, and USFWS by January 31 annually. The FOMP shall be developed in consultation with and require approval by the MDFW, NMFS, and USFWS prior to submitting the final FOMP to the FERC for approval. The FOMP shall be completed no later than 6 months prior to the barrier net being placed into service, as outlined in the schedule in Article B200. Thereafter, the same FOMP shall be amended by the Licensee within 6 months prior to the following:

- Any AMM's are placed into service, as outlined in Articles B220; and,
- Any operational or facility modifications resulting from new information obtained from operation of the barrier net pursuant to the annual O&M reports.

25. Erosion Mitigation, Stabilization, and Monitoring

Upon license issuance, the Licensee shall comply with and implement the Erosion, Mitigation, and Monitoring Plan at Appendix F.

26. Water Quality Monitoring

Within 1 year after license issuance, the Licensee will finalize a MassDEP-approved Water Quality Monitoring Plan that is based on a Quality Assurance Project Plan (QAPP) and developed in

consultation with and upon written concurrence from MassDEP. The QAPP will outline the procedures and methods for collecting,

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analyzing and managing the water quality data. It shall also include details on sampling methods, equipment calibration, data management, and quality control procedures. The QAPP shall be resubmitted every 5 years for re-approval and the Licensee shall submit any significant or substantive changes to the QAPP as an addendum to the approved QAPP. The following are minimum requirements:

The sample locations include:

- Barton Cove, Segment MA34122.
- Turners Falls Impoundment, Segment MA34-01 (Stateline to Route 10 Bridge). The sample location shall be approximately 800 feet north of the Route 10 Bridge (near the eastern end of the old Bernardston Road in Northfield), which is consistent with the existing sampling location in the Massachusetts water quality database (42.6853667, -72.47374624).
- Turners Falls Impoundment, Segment MA34-02 (Route 10 Bridge to Turners Falls Dam). The sample locations shall be within the Northfield Mountain tailrace and behind the Turners Falls Dam.

- Connecticut River below Cabot Station, Segment MA34-03 (Turners Falls Dam to confluence with Deerfield River). The sample location shall be located immediately below Cabot Station.

- The above sampling locations may change during development and review of the QAPP and thereafter, if determined by MassDEP to be necessary.

Continuous monitoring equipment shall be checked as needed to ensure functionality, with the

148. Seldon Gary

February 23, 2025 at 4:12:07 PM
One month for report prep,
make it consistent throughout
the Certificate.

149. Seldon Gary

February 11, 2025 at 12:15:54 PM
This is an EXISTING example of
FL needing approval from, ...
This is how 'they all' should be.
DEP and the other agencies
should have final say authority
over FL.
The people, through DEP with
this Certificate, need assurance
that the process of determining
terms for use of the public trust
resource are not dominated by a
well heeled licensee.

150. Seldon Gary

February 11, 2025 at 12:32:52 PM
I'm concerned about all
elements of this table.
Are the locations, the times of
year (why just 4 months),
frequency of sampling, and
things being tested for
definitively enough to determine
whether or not there will be
compliance with the SWQS,
with all regulations and laws?

expectation that utilizing the proper equipment and implementing sufficient installation and siting methodologies may reduce necessary equipment and installation checks to 1x/month to ensure functionality.

148 | By March February 1 following the previous year's monitoring, the Licensee shall provide MassDEP with a report summarizing the previous summers' findings along with the raw data. A data summary and the raw data files shall be submitted contemporaneously but separately from the report. After 5 years of monitoring, the Licensee may request that required monitoring be performed every two years instead of annually. MassDEP shall decide whether to deny or allow such request.

149 | **Time of Year/ Sample Frequency/Chemical Constituents**

150 | **Time of Year Location Sampling**

Chemical

Frequency

Constituents

Barton Cove June, July,

August and

September

2x/month

Total Phosphorus,

and chlorophyll a

*Continuous or

1x/week

Dissolved oxygen,

and temperature

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Location Time of Year Sampling

Chemical

Frequency

Constituents

Turners Falls

Impoundment,

Segment MA34-01

June, July,

August and

September

2x/month Dissolved,

oxygen,

temperature, total

phosphorus, and

chlorophyll-a

Turners Falls

Impoundment, behind

the Turners Falls Dam,

Segment MA34-02

June, July,

August and

September

*Continuous

profile at 10-

foot increments

2x/month

151. Seldon Gary

January 29, 2025 at 5:22:21 PM

Will this get the info needed to know whether the NMPS effluent releases are 'illegal'

Dissolved oxygen
and temperature
Total phosphorus,
chlorophyll-a,
total suspended
solids and
turbidity

151 Turners Falls
Impoundment, Northfield
Tailrace, Segment
MA34-02

June, July,
August,
September
2x/month Dissolved oxygen,
temperature, total
phosphorus, chlorophyll-
a, total suspended solids
and turbidity

Connecticut River below
Cabot Station, Segment
MA34-03

June, July,
August and
September
2x/month Total suspended solids
and turbidity

27. Invasive Species Management Plan

Upon license issuance, the licensee shall comply with and implement the Invasive Plant Species Management Plan that is included at Appendix G.

28. Riparian Management Plan

Within two years of FERC license issuance, the Licensee shall submit a draft riparian management plan (plan) to MassDEP for its review and approval for lands that the Licensee owns in fee along the Connecticut River shoreline other than those used for the Specific Project Purposes of power production and Project recreation facilities.

(a) The goals of maintaining a 75-foot vegetated riparian zone on property owned by Licensee along the Connecticut River, where feasible (as determined by MassDEP), are to:

(i) serve as a vegetative filter to reduce non-point source discharges of oil and grease, sediment, nutrients and fertilizers, pesticides, and other contaminants that may be transported to the Connecticut River in overland runoff;

(ii) protect near shore fish, aquatic life, and wildlife habitat from degradation resulting from adjacent uses and disturbances and from alterations to the riparian zone including docks, riprap, and other structural modifications;

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(iii) provide significant wildlife habitats and buffers adequate to avoid disturbance from adjacent uses for species utilizing the river and associated wetlands, including but not limited to rare, threatened, or endangered wildlife species, or other state or federally listed species of concern; and

(iv) provide shade and cover, which cools water and air temperatures; increases food and oxygen availability; serves as an area for shelter, breeding, and migratory and overwintering stops; and

152. Seldon Gary

February 23, 2025 at 4:30:04 PM
Close loopholes.

promotes amphibious organisms.

(b) The plan shall include all lands owned in fee by the Licensee abutting the Connecticut River other than those used for the Specific Project Purposes identified above. The draft plan shall, without limitation:

(i) specify how a 75 foot riparian zone adequate to protect water quality and designated and existing uses will be implemented, subject to (b)(iv) and (b)(v) below, specifically addressing how long-term conservation of important riparian areas will be assured as needed to achieve this objective;

(ii) allow the revegetation and protection of existing vegetation on all Project Lands within 75 feet of the riverbank and prevent any alteration of such land, except to the extent necessary to enhance revegetation or to the extent of a conflict with deeded rights, the Recreation Settlement Agreement filed with FERC on June 12, 2023, or the FERC "Order Modifying and Approving Non-Project Uses of Project Lands and Waters" dated October 28, 2009 (129 FERC 62,075);

(iii) specifically propose how the entire plan will be implemented;

(iv) specify which parcels are excluded from the riparian management plan because they are used for the Specific Project Purposes identified above;

(v) be subject to existing deeded or contractual rights held by third parties with respect to land owned by the Licensee;

(vi) not require the use of Conservation Restrictions or easements, except where required by the Recreation Settlement Agreement; and

(vii) be consistent with G.L. c. 131 § 40, and 310 CMR 10.58.

(c) The Licensee shall incorporate or otherwise respond to all MassDEP comments on the draft plan and submit a final plan to MassDEP for approval. The Licensee shall implement the plan as approved, including any changes required by MassDEP.

(d) The Licensee shall notify MassDEP and MADCR in writing within 30 days of any sale of its lands within the FERC Project Boundary. The Licensee shall provide all purchasers of such lands with a copy of the Riparian Management Plan **prior to the sale**, and will assure that all purchasers of such lands will be bound by the requirements of the Riparian Management Plan.

29. Recreation Management Plan

The Licensee shall implement the Recreation Management Plan dated May 2023.

30. Sediment Management Plan

Within one year of license issuance, the Licensee shall file with MassDEP, for its approval, a revised Sediment Management Plan that presently exists for the Northfield Project and incorporates additional supplemental information related to monitoring, reporting, and planning of sediment management for the Northfield pumped storage facility. The revised plan shall include a requirement that following

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Northfield monitoring, a report shall be generated and submitted with the collected data, including an evaluation of sedimentation rates that establish a trajectory of potential dredging events, if needed. Based on those identified scenarios and/or thresholds, protocols shall be developed for the movement/management of removed sediment with proposed locations of potential long-term storage/disposal. Following any dredging event, details on construction and discharge monitoring shall be included in the revised plan.

31. Consideration of Climate Change on Fish Passage

The Licensee shall comply with schedules provided by USFWS with respect to the timing of opening and closing of its migratory fish passage facilities at the Turners Falls Hydroelectric Project and the timing of installing/removing the barrier net at the Northfield Mountain Pumped Storage Project. The USFWS schedules can account for climate-induced changes in migration timing for affected fish, including American Shad and American Eel. On an annual basis, the Licensee shall comply with the USFWS' schedule for opening and closing the fish passage facilities, with particular attention to the

153. Seldon Gary
February 23, 2025 at 4:56:13 PM
Don't let FERC loosen the Team Plan.
154. Seldon Gary
February 22, 2025 at 10:33:59 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing?
155. Seldon Gary
February 23, 2025 at 4:36:41 PM
Close loopholes.
156. Seldon Gary
February 23, 2025 at 4:40:19 PM
Are these the right agencies? Anyone missing?
157. Seldon Gary
February 22, 2025 at 10:35:51 PM
Again, move the decision making power away from the
158. Seldon Gary
February 23, 2025 at 4:53:34 PM
Don't let FERC loosen the Team Plan.

USFWS' adjustments to address climate change.

32. Turners Falls Canal Drawdown Aquatic Organism Protection

- 153 Within one (1) year of license issuance, the Licensee shall file for with the Commission approval, a Turners Falls Canal Drawdown Aquatic Organism Protection Plan (Plan), describing measures the Licensee will implement to minimize impacts to aquatic organisms during the annual canal drawdown. The Plan shall
- 154 be developed in consultation with and upon written concurrence from the USFWS, MassWildlife, and MassDEP, FRCOG, the municipality of Montague, and the Connecticut River Conservancy (CRC). The Plan, along with the consultation record, shall include the following:
- a) Procedures for the Canal drawdown including:
- conducting the annual canal drawdown no earlier than mid-September;
 - drawing down the canal at the rate used in 2014 until the Canal Drawdown Team (discussed below) identifies a permanent rate of canal water level drawdown that sufficiently protects aquatic resources in the canal;
 - installing cones in the canal to identify paths for large machinery to follow while undertaking maintenance work in the canal during the drawdown.
- 155 b) Creation of a temporary Canal Drawdown Team (Team) comprised of the Licensee, USFWS, MassWildlife, and MassDEP, FRCOG, the municipality of Montague, and CRC for the purpose of identifying additional measures beyond those
- 157 listed in item a) above, if needed, to minimize stranded and/or dewatered organisms during the canal water level drawdown. For the first, second, and third canal drawdowns after license issuance, the Team shall meet twice a year to discuss the proposed procedures for the next canal drawdown, alternative measures to minimize impacts to aquatic organisms, whether to implement the alternatives, and any information needs. After the third, eighth, thirteenth, eighteenth, and every five
- 158 years thereafter for the license term, canal drawdown, the Licensee upon written concurrence from the rest of the Team shall update the Plan in item a) above, if needed, and file it, along with consultation record with FERC. for approval. Upon FERC's approval, the Licensee shall implement the Plan and the Team may be disbanded.

c) Until and unless the measures implemented pursuant to item (b) conflict, the Licensee shall continue to allow public access to the dewatered portion of the canal for scientific and environmental outreach and education activities, such as volunteer aquatic life rescue efforts during the drawdown, and maintain communication and coordination with the USFWS'

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Connecticut River Coordinator.

33. Bald Eagle Protection Plan

The Licensee shall implement the Bald Eagle Protection Plan at Appendix H.

34. Bat Protection Measures

The Licensee shall implement the following measures to protect state or federally listed bat habitat: (1) avoid cutting trees equal to or greater than 3 inches in diameter at breast height within the Northfield Mountain Pumped Storage Project boundary from April 1 through October 31, unless they pose an immediate threat to human life or property (hazard trees); and (2) where non-hazard trees need to be removed, only remove non-hazard trees between November 1 and March 31.

Notice of Appeal Rights

Within 21 days of the issuance of MassDEP's decision to grant, grant with conditions, or deny a water quality certification pursuant to Section 401 of the federal Clean Water Act, the following persons shall have a right to request an adjudicatory hearing concerning MassDEP's decision:

- a. the applicant;
- b. any person aggrieved by the decision who has submitted written comments during the public comment period;
- c. any ten persons of the Commonwealth pursuant to M.G.L. c. 30A, § 10A, where a group

member has submitted written comments during the public comment period; or
 d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten (10) persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice.

How should the request for an adjudicatory hearing be made?

A request for an adjudicatory hearing concerning DEP's Section 401 water quality certification of the FERC license must be made within 21 days of the issuance of MassDEP's decision to grant, grant with conditions, or deny the water quality certification, in accordance with 310 CMR 1.01. 310 CMR 1.01(6)(b) establishes the required form and content of the request. Failure to meet the requirements of 310 CMR 1.01 may result in dismissal of the request or the requirement to file a more definite statement.

A person filing a request for an adjudicatory hearing must complete and mail a MassDEP Fee Transmittal Form for the request and send it with a valid check to the Commonwealth Master Lockbox, as instructed below, if a fee is required by 310 CMR 4.06. The MassDEP Fee Transmittal Form can be downloaded from:

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<https://www.mass.gov/doc/adjudicatory-hearing-fee-transmittal-form/download>

The written notice requesting an adjudicatory hearing shall be delivered to MassDEP's Case Administrator together with (i) a photocopy of the decision being appealed, (ii) a photocopy of the completed MassDEP Fee Transmittal Form, if required, and (iii) a photocopy of the check used to pay any adjudicatory hearing filing fee due for the appeal under 310 CMR 4.06.

The notice of claim and other items can be sent to OADR by mail (MassDEP Office of Appeals and Dispute Resolution, Case Administrator, 100 Cambridge Street, Suite 900, Boston, MA 02114), hand delivery, e-mail (Caseadmin.OADR@mass.gov) or fax ((617) 574-6880) (further information at <https://www.mass.gov/how-to/file-an-appeal-with-massdeps-office-of-appeals-and-dispute-resolution>).

Please do *not* send the original of the completed MassDEP Fee Transmittal Form and check to the Case Administrator. Instead, please follow the instructions below for delivery of the original of the completed Fee Transmittal Form and check to the Commonwealth Master Lockbox.

A \$100 adjudicatory hearing filing fee must be paid, unless (i) a simplified hearing is requested for a reduced fee of \$25; (ii) the person requesting an adjudicatory hearing is a city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority effective January 14, 1994, or any municipal housing authority, in which case there is no fee; or (iii) the person requesting the hearing is seeking to have MassDEP waive the adjudicatory hearing filing fee because paying the fee will create an undue financial hardship.

A person who believes that payment of the fee would be an undue financial hardship shall file with the request for adjudicatory hearing a request for waiver of the fee together with an affidavit setting forth the facts the appellant believes constitute the undue financial hardship. For more information on the adjudicatory hearing filing fee and the grounds on which the Department may waive the fee, please see 310 CMR 4.06.

If a fee is required, the completed MassDEP Fee Transmittal Form and a valid check made payable to the Commonwealth of Massachusetts for the amount of the fee due must be mailed to:

Mass. Department of Environmental Protection

Commonwealth Master Lockbox

P.O. Box 4062

Boston, Massachusetts 02211

Failure to pay the adjudicatory hearing filing fee, if required, may be grounds for dismissal of the

159. Seldon Gary

February 12, 2025 at 4:35:06 PM
Please provide the 'non-public'
report.

appeal.

Page 83 of 117 *Submissions under this Certification shall be sent to:*

MassDEP:

MassWildlife:

USFWS:

Massachusetts Department of Environmental Protection

Bureau of Water Resources

Division of Wetlands and Waterways

100 Cambridge Street, Suite 900

Boston, MA 02114

Massachusetts Department of Environmental Protection

Bureau of Water Resources

Western Regional Office

436 Dwight Street

Springfield, MA 01103

Massachusetts Division of Fisheries and Wildlife Field

Headquarters

Assistant Director of Fisheries

1 Rabbit Hill Road

Westborough MA 01581

Massachusetts Division of Fisheries and Wildlife

Assistant Director of Natural Heritage & Endangered Species Attn:

Regulatory Review

1 Rabbit Hill Road

Westborough MA 01581

United States Fish and Wildlife Service

New England Field Office

Attention: Supervisor

70 Commercial Street, Suite 300

Concord, NH 03301-5087

Bonnie Heiple, Commissioner

Massachusetts Department of Environmental Protection

Date

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Appendix A

MassWildlife, State Listed Plans of Focus

Page 85 of 117

May 2024, state-listed plants of focus in the bypass reach for Turner's Falls relicensing

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The 'Summary of Concerns (Updated 2024)' states: '... FirstLight prepared a rare plant impact analysis in 2017 as part of settlement negotiations (see October 2017 Non-Public Report; analyzing all rare plants in the bypass area of study). ...'

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... Sub populations further downstream in the bypass reach will likely be heavily impacted under the proposed minimum summer/fall flows below Station 1 (1,500 t- 1,800 cfs, Fish and Flows Agreement) than was previously estimated. However, in consideration of other species', recreational and tribal interests, DFW elected not to push for further reductions in TFD spill flow during 2022-23 settlement discussions. Instead,

DFW agreed to flows of 500 cfs below TFD during the summer months despite the still significant impacts (>30-40%) that are likely to occur to the primary plunge pool sub-population.

...
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Appendix B
Current and Future Exceedance Curves

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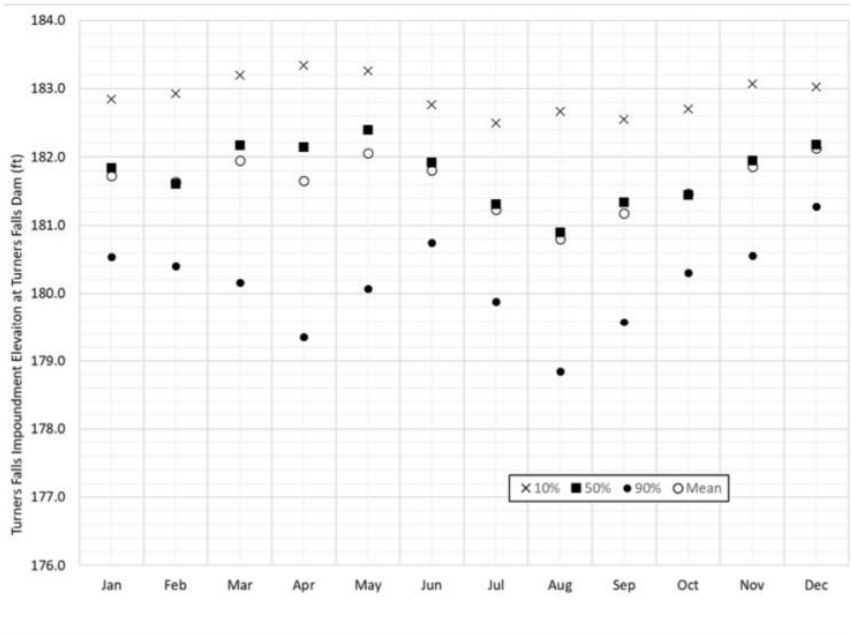
Figure 2. Turners Falls Impoundment- 10, 50, 90% Exceedance Elevations and Mean Elevation under Baseline (Existing) Conditions
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Figure 1. Turners Falls Impoundment- 10, 50, 90% Exceedance Elevations and Mean Elevation under the FFP Settlement Agreement
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Appendix C
Drawdown Photos to Approximately 179 Feet

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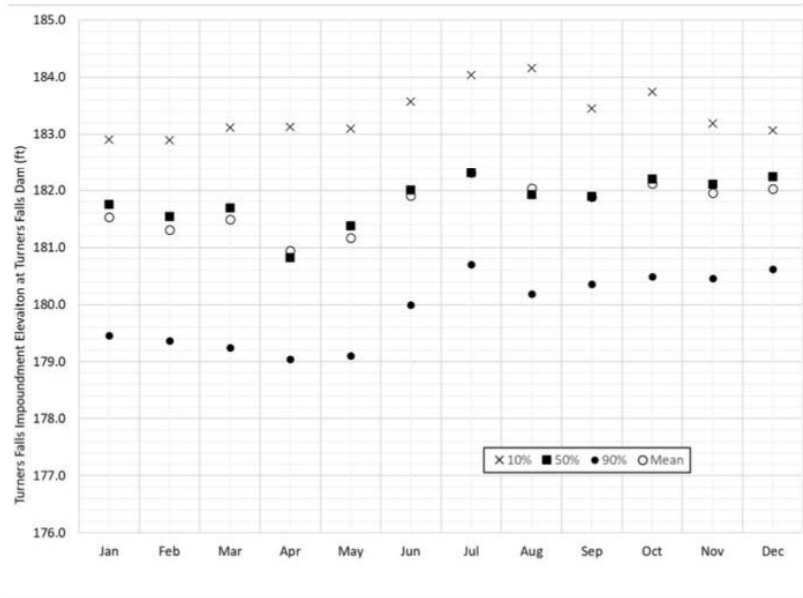
Appendix D
Drawdown Photos Below 179 Feet



160. Seldon Gary
February 11, 2025 at 2:12:06 PM
Other than shortening the time period for these repairs to be done to within 4 years, my intention is to clarify and specify what this says, without changes to content.
Perhaps I've been successful, perhaps not!

Page 98 of 117Page 99 of 117Page 100 of 117Page 101 of 117

Appendix E
June 14, 2021 Drawdown Photos Below 179 Feet



Page 102 of 117Page 103 of 117Page 104 of 117“Low Water Levels for parts of Connecticut River in Franklin County.”
22 News, WWLP.com (W. Massachusetts), June 14, 2021,
<https://www.wwlp.com/news/local-news/franklin-county/low-water-levels-for-parts-of-connecticut-river-in-franklin-county/>

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Appendix F
Erosion Mitigation, Stabilization, and Monitoring Plan

Page 106 of 117Erosion Mitigation, Stabilization, and Monitoring Plan

160. **Repair & Stabilize Certain 'Previously Stabilized' 2013 FRR Sites:** Within 4 6 years of license issuance, the Licensee shall repair and stabilize all the Ppreviously Sstabilized Ssites shown in Table D-1 below, in the TFI where the 2013 Full River Reconnaissance (2013 FRR) identified erosion and the sites that have not already been repaired since 2014. These sites include bank segments 14, 371, 65, and 478 that were delineated during the 2013 FRRFull River Reconnaissance (2013 FRR), equaling approximately 429 linear feet. See Table D-1 below.

161. Seldon Gary

February 11, 2025 at 2:31:19 PM

Again I attempt to make this perfectly clear, and tighten possible loopholes, and reduce the years from 6 to 4.

I've also changed the content so that repair is required.

162. Seldon Gary

February 22, 2025 at 11:05:24 PM

Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing?

161 *Additional New Sites to be Stabilized/Repair & Stabilize 'New' 2013 FRR Sites:* In addition to the completed stabilization projects noted above, within 4 6-years of license issuance, the Licensee shall repair and stabilize all the New Sites shown in Table D-1 below. ~~implement stabilization or preventative maintenance projects at three additional sites within the TFI, which equate to an additional 667 linear feet.~~ These sites were identified during the 2013 FRR as having the most erosion of the banks within Massachusetts that had not already been stabilized. These sites include bank segments 90, 87, and 119 that were delineated during the 2013 FRR, equaling approximately 667 linear feet. See Table D-1 below.

Table D-1. Specific Stabilization Sites

Segment	Previously	Bank	River Station	Length	Restored	Restoration Site	Segment to	(approx.)	(ft.)	Site	Name	New Sites
90	320+00	62	No	N/A								
87	300+50	208	No	N/A								
119	400+50	397	No	N/A								
Sub-Total 667 ft												
Previously Stabilized Sites												
14	70+00	145	Yes	Montague								
371	50+50	37	Yes	Campground Point								
65	240+50	147	Yes	River Road								
478	570+00	100	Yes	Bennett Meadow								
Sub-Total 429 ft												

Erosion Control Monitoring Plan: Within 1 year of license issuance, the Licensee shall consult with and obtain written approval from

162 *MassDEP, Franklin Regional Council of Governments (FRCOG,) and the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River* to develop an Erosion Control Monitoring Plan that sets forth the methods and procedures for documenting shoreline erosion for the term of the license and conducting the surveys and inspections discussed below. The Erosion Control Monitoring Plan shall be implemented beginning in year 2 of the new license with the baseline survey.

Erosion Monitoring Surveys (Years 2, 10, 20, and 30): Within 2 years of license issuance, the Licensee shall conduct an initial Erosion Monitoring Survey of the TFI within Massachusetts to serve as a baseline. This baseline survey and the subsequent 10, 20, and 30 year monitoring surveys must, at a minimum, comply with the Quality Assurance Project Plan (QAPP) that was established for the 2013 FRR. Bank segment ID corresponds to the TFI bank segments delineated during the 2013 FRR.

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FRR or any subsequent QAPPs. Erosion Monitoring Survey's shall consist of boat-based reconnaissance surveys of the Massachusetts portion of the TFI. During the boat-based survey, a field crew shall delineate bank segments based on common bank features, characteristics, and erosion conditions as defined in the Erosion Monitoring Plan. The field crew shall also collect video of the banks during the survey. The Erosion Monitoring Surveys shall occur in November during leaf-off

163. Seldon Gary

February 11, 2025 at 3:36:06 PM

This is an EXISTING example of FL needing approval from, ...
This is how 'they all' should be.
DEP and the other agencies should have final say authority over FL.

164. Seldon Gary

February 23, 2025 at 8:28:04 PM

Clarity that all new erosion must be included, not just "any new erosion that was not part of a previously stabilized site ..."

165. Seldon Gary

February 11, 2025 at 3:43:27 PM

Specify how large. I've guessed. Close loopholes.

166. Seldon Gary

February 11, 2025 at 4:16:18 PM

This is an existing example of FL needing approval from, ...

167. Seldon Gary

February 23, 2025 at 8:33:59 PM

The process to develop the ECMP is specified earlier, on p. 107.

168. Seldon Gary

February 23, 2025 at 8:38:55 PM

Trade less years of erosion for the right to use the public trust River.

169. Seldon Gary

February 23, 2025 at 8:40:10 PM

Improve clarity, reduce wiggle room.

170. Seldon Gary

February 11, 2025 at 4:30:41 PM

Is this tight enough?
Not a loop-hole for the licensee to avoid repairs?

171. Seldon Gary

February 11, 2025 at 6:02:15 PM

Hoping to improve clarity, I've added a sentence mirroring the first one, which I've limited to prior to the first Erosion Control Monitoring Plan, using the second force the Plan is implemented.

conditions.⁷¹

Following the completion of each Erosion Monitoring Survey, the Licensee shall prepare a report summarizing the survey methods and results and submit it to MassDEP, FRCOG, and the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River for review and approval in the first quarter of the year following the Erosion Monitoring Survey. The report shall also identify new and previously repaired bank segments needing stabilization or preventative maintenance. Once approved, the report shall be filed with FERC.

Boat-Based Inspections (Years 4, 6, 8, 12, 15, 25, 35, 45): Boat-based site inspections of the TFI shall be conducted in Years 4, 6, 8, 12, and 15 in November during leaf-off conditions. After Year 15, the boat-based site inspections shall be conducted in Years 25, 35 and 45. The boat-based inspections shall include visual observation of all TFI bank conditions within the Massachusetts portion of the TFI, maintenance inspections of previously stabilized sites, geo-referenced videotape coverage of the entire TFI shoreline, and development of a summary memo and maps detailing the results of the inspection, including all new erosion, and including any new erosion that was not part of a previously stabilized site or in Table 1. The level of

detail of the video shall be sufficient to observe any visual indicators of potential erosion, including absence of vegetation, exposed tree roots, visible gullies or rills, muddy runoff water, large areas, > 9 square feet of bare

soil, collapsing stream banks, sediment deposits, and a noticeable change in shoreline position. The summary memo, geo-referenced videotape coverage, and maps shall be provided to MassDEP, FRCOG, and the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River for review and approval in the first quarter of the year following each Boat-based Site Inspection. The summary memo shall include a repair and maintenance plan, as needed, for sites requiring repair or preventative maintenance.

The boat-based site inspections component of the Erosion Control Monitoring Plan that the Licensee develops with MassDEP for

these boat-based site inspections shall comply with the recommendations and protocol developed by Dr. John Field, Field Geology Services (Farmington, ME) in July 2011, in a report titled "Detailed Analysis of the 2008 Full River Reconnaissance of the Turners Falls Pool on the Connecticut River, Prepared for Landowners and Concerned Citizens for License Compliance Turners Falls Pool."⁷²

Previously Stabilized Site Repair: Except as noted otherwise below, within 2 ½ years of discovery during the Erosion Monitoring Surveys or the Boat-based Site Inspections, the Licensee shall repair and stabilize all previously stabilized sites requiring maintenance or repair that exhibit 'Some to Extensive' or 'Extensive' erosion based on the definitions contained within the 2013 FRR, in addition to the sites identified in Table D-1.

⁷¹ These 10-year surveys shall continue until expiration of the license, and thus shall be conducted in years 40 and 50 if the license lasts that long.

⁷² These measures include: (1) having clear definitions and examples for bank features, characteristics, and erosion conditions to ensure consistency between future surveys and to assist the survey crew with clearly identifying bank conditions, (2) identifying the types of erosion, indicators of erosion, and stage of erosion, and (3) including a detailed photo log. The Plan shall also include examples so that the methodology will be easily repeatable from survey to survey to ensure the results are comparable. Establishing a clear foundation from which all future surveys shall be based on will ensure consistency over the license term.

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The Licensee shall not be responsible for repairing previously stabilized sites that are damaged by high flow or ice conditions unless prior to the high flow or ice event the site was previously categorized as having "some to extensive" or "extensive erosion" and the site had not been repaired or stabilized. "High flow conditions" shall be defined in the Erosion Control Monitoring Plan as at least 100,000 cfs, measured at the USGS Gage on the Connecticut River at Montague City, MA.

Future New Stabilization Sites: SPrior to the Erosion Control Monitoring Plan to be implemented beginning in year 2 of the new license with the baseline survey, mentioned above, sites that are newly identified after issuance of the license as exhibiting

172. Seldon Gary

February 23, 2025 at 8:42:57 PM
Trade less years of erosion for the right to use the public trust River.

173. Seldon Gary

February 23, 2025 at 8:57:16 PM
I propose stricter standards for the Licensee to meet to not have to make repairs in an impoundment largely in their control.

174. Seldon Gary

February 11, 2025 at 5:43:19 PM
The pull/push turbines are the dominant erosion causing 'unique condition.'

That it's an impoundment, not a river, is a dominantly 'unique condition.'

175. Seldon Gary

February 11, 2025 at 5:59:27 PM
FL controlled regular elevation changes causes the lack of a normal riparian buffer.

176. Seldon Gary

January 31, 2025 at 6:32:39 PM
Sadly, this seems likely to be a useable loophole for the Licensee.

177. Seldon Gary

February 23, 2025 at 9:04:41 PM
5% is far too slow a rate.

178. Seldon Gary

February 22, 2025 at 11:06:30 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing?

179. Seldon Gary

February 23, 2025 at 9:08:35 PM
Sadly, this seems to be a red hearing.

'Some to Extensive' or 'Extensive' erosion based on the definitions contained within the 2013 FRR and which were not previously repaired or stabilized by anyone nor identified above in Table D-1, shall be repaired and stabilized by the Licensee within 2.5 years of their discovery. ~~during~~ Once the Erosion Control Monitoring Plan to be implemented beginning in year 2 of the new license with the baseline survey, mentioned above, has been implemented and is in force, sites that are newly identified, shall be repaired and stabilized by the Licensee within 2 years of their discovery during the Erosion Monitoring

Surveys or the Boat-based Site Inspections, subject to the following limitations:

Sites that shall not be considered for repair and stabilization are those that can be shown to have almost no chance to be the result of the Licensee's operations, less than 5% probability, as represented in the most current Erosion Control Monitoring Plan, Erosion Monitoring Survey or Boat-based Site Inspection, such as, ~~exhibit unique~~

~~conditions that~~

~~are causing the erosion. These sites are limited to those where erosion is being caused by adjacent bridges and tributary mouths; sites where upland management activities having unique conditions are directly impacting erosion processes; Barton Cove where boat waves contribute significantly to erosion; and islands. Bank segments where upland land management activities are identified as resulting in unique conditions causing erosion are those segments where erosion is present and caused by: (1)~~

~~agricultural activity or other development that is occurring to the edge of the bank with minimal to no riparian buffer (i.e., a riparian buffer that is less than 15 ft. in width); (12) agricultural activity that is occurring along the bank (e.g., livestock climbing up and down the bank from the field to the river), or (2 3) irrigation infrastructure, (4) boat docks, or (5) other non-project related manmade activity that is directly~~

~~resulting in erosion. In addition, although not man-made, the presence of sensitive wildlife receptors shall also be considered as part of determining the extent to which the site should be stabilized (e.g., bank swallow, belted kingfisher, and bald eagle nesting).~~

Following the Licensee responsibility described in the first two paragraphs and Table D-1 above, the Licensee shall be responsible for repairing 50% of the total new bank segments identified in the intervals between each of the Erosion Monitoring Surveys (Years 2, 10, 20, and 30), regardless whether they were identified during the above Boat-based Inspections or the Erosion Monitoring Surveys. New bank segments revealing 'Some to Extensive' or 'Extensive' erosion includes any segment not previously stabilized or in Table 1. Following each Erosion Monitoring Survey, the Licensee shall quantify the total linear feet of new bank segments that were identified either during the Erosion Monitoring Survey or during preceding Boat-based Site Inspections as exhibiting 'Some to Extensive' or 'Extensive' erosion. The Licensee shall determine how many linear feet 50% of the total equates to and identify potential stabilization projects that equate to that length. The Licensee and MassDEP shall consult with and obtain written approval from MassDEP, FRCOG, and the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River on what bank segments, representing the 25%, are to be stabilized. The 50% shall account for

stabilization work that the Licensee performed on new sites in between each Erosion Monitoring Survey. This 50% shall not include previously repaired sites or sites in Table 1 that may require maintenance. If MassDEP determines that the linear foot equivalent of 50% will not provide a significantly improved stream bank condition, MassDEP may reserve the equivalent linear feet for use in the future.

~~Barton Cove. FirstLight shall work with the appropriate state and federal agencies to implement within five years of license issuance a no-wake zone from the Turners Falls Dam (Station 0+00) to where the TFI narrows upstream of Barton Cove (Station 110+00) to address the impact of boat waves on shoreline erosion.~~

Appendix G

Invasive Species Management Plan

180. Seldon Gary

February 22, 2025 at 10:36:54 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

181. Seldon Gary

February 23, 2025 at 9:10:33 PM
Are these the right agencies? Anyone missing? FRCOG?

182. Seldon Gary

February 22, 2025 at 10:37:41 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG?

Page 110 of 117 **Invasive Species Management Plan****1 MONITORING MEASURES FOR INVASIVE AQUATIC PLANTS****1.1 Develop Invasive Aquatic Plan Monitoring Plan**

Within six months after license issuance, the Licensee shall develop an Invasive Aquatic Plant Monitoring, Treatment, and Control Implementation Plan (Plan) in consultation with and upon written concurrence from the US Fish and

Wildlife Service (USFWS), MassDEP, and MassWildlife, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the Connecticut River Conservancy (CRC) The Plan and consultation record shall be

filed with FERC and shall elaborate as necessary on the components below and specify how they will be implemented.

1.2 Updated Baseline Invasive Aquatic Plant Survey

In the summer of year 2 after license issuance, the Licensee shall conduct an intensive invasive aquatic plant survey of the Turners Falls Impoundment (TFI) from the Turners Falls Dam to the state border and the bypass reach (from the Turners Falls Dam to Cabot Station). In years 5 and 10 after license issuance and every five years thereafter for the license term the Licensee shall survey the entire TFI (from Turners Falls Dam to state border) and bypass reach to update the first baseline survey.

The survey of the TFI shall be conducted by boat in the late summer (August/September) to facilitate identification of any invasive aquatic plants by means of floristic attributes. The survey methodology shall include semi-quantitatively documenting the invasive aquatic plants found in the TFI to location, size and percent cover by cover class range (i.e., 2-25%; 25-50%; 50-75%; and 75-100%). Estimates of stand width shall be made in three meter intervals (1-3, 3-6, 6-9, and >10 m). Estimates of length shall be made to the nearest foot. Each observation of invasive aquatic plants shall be assigned a cover descriptor category.

The location of the invasive aquatic plants shall be recorded using Geographic Positioning System (GPS) technology for later upload into a GIS map to define baseline or current conditions, and shall include Site ID number, the invasive plant species found (color coded in a legend), and the percent cover. The survey of the bypass reach shall be conducted by canoe and/or foot and shall follow the same methodology as described above.

By February 1 of the year after completing the intensive field survey, the Licensee shall provide a report to the USFWS, MassWildlife, and MassDEP, the municipalities of Montague, Gill, Northfield, and Erving,

Massachusetts, on the Connecticut River, and the CRC for review and comment (including providing the geospatial data in kml/kmz format). The Licensee shall meet (remotely or in-person) with USFWS,

MassWildlife, and MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC to discuss study results, identify areas warranting control work, and and upon

written concurrence from USFWS, MassWildlife, MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC

determine appropriate control approach(es). The Licensee shall update the report (if necessary) and file it with FERC, along with the consultation record, no later than May 1.

1.3 Annual Surveys and Early Detection and Rapid Response Protocol (EDRR)

The purpose of the Annual Surveys and the EDRR protocol is to find and eradicate new invasive plant infestations before they spread and cause harm and to assess the success of control measures and guide where future control measures should occur. Annual surveys are not necessary during the years when the Licensee conducts the baseline survey or the follow-up baseline surveys every 5 years pursuant to § 1.2 above.

Page 111 of 117 Starting the year after completing the updated baseline survey, the Licensee shall undertake annual monitoring and EDRR surveys from the Turners Falls Dam to the Route 10 Bridge. The EDRR component of the annual surveys shall focus on highly aggressive, invasive aquatic species known to occur elsewhere in the watershed.

183. Seldon Gary
February 23, 2025 at 9:13:26 PM
Are these the right agencies?
Anyone missing? FRCOG?
184. Seldon Gary
February 22, 2025 at 10:38:31 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG?
185. Seldon Gary
February 23, 2025 at 9:14:28 PM
Specify how long. Close loopholes.
186. Seldon Gary
February 13, 2025 at 3:19:38 PM
This is an EXISTING example of FL needing approval from, ... This is how 'they all' should be. DEP and the other agencies should have final say authority over FL.
187. Seldon Gary
February 23, 2025 at 9:16:02 PM
Licensee rapid response measures shouldn't be limited to Barton Cove
188. Seldon Gary
February 23, 2025 at 9:19:21 PM
Are these the right agencies? Anyone missing? FRCOG?
189. Seldon Gary
February 23, 2025 at 9:19:37 PM
Are these the right agencies? Anyone missing? FRCOG?
190. Seldon Gary
February 23, 2025 at 9:19:52 PM
Are these the right agencies? Anyone missing? FRCOG?
191. Seldon Gary
February 22, 2025 at 11:07:05 PM
Again, move the decision making power away from the Licensee, to these agencies. Are these the right agencies? Anyone missing? FRCOG?
192. Seldon Gary
February 23, 2025 at 9:20:28 PM
Are these the right agencies? Anyone missing? FRCOG?
193. Seldon Gary
February 22, 2025 at 10:42:02 PM
Again, move the decision making power away from the Licensee, to 'all the parties' which is a group that does not include the Licensee. Are these the right agencies? Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

- 183 For EDRR, the Licensee shall consult with USFWS, MassWildlife, and MassDEP, the municipalities of Montague, Gill, and Erving, Massachusetts, on the Connecticut River, and the CRC to identify project
- 184 areas most likely to experience infestations first and to, upon written concurrence from USFWS, MassWildlife, MassDEP, the municipalities of Montague, Gill, and Erving, Massachusetts, on the Connecticut River, and the CRC determine the most appropriate survey methodology to use, with the default method following the rapid response guidance provided by the Massachusetts Department of Conservation and Recreation. Annual surveys must also assess the success of control measures and guide where future control measures should occur.
- 185 Should any new invasive species be detected, the Licensee shall immediately, within 24 hours notify the USFWS, MassWildlife, and MassDEP; consult with those agencies on the appropriate rapid response approach(es); and implement rapid response measures identified by the agencies. The Licensee is only responsible for rapid response measures in Barton Cove. These early detection surveys and rapid response measures (as needed) shall continue annually for the duration of the license.
- 187 By February 1 of the year after completing the annual surveys, the Licensee shall provide a summary memorandum to the USFWS, MassWildlife, and MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC for review and comment (including providing the geospatial data in kml/kmz format if new infestations were detected). The Licensee shall meet (remotely or in-person) with USFWS, MassWildlife, and MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC to discuss survey results, any control work undertaken by the Licensee in Barton Cove, any known control work undertaken by others, and any modifications to the early detection survey protocol that may be warranted for the upcoming field season. The Licensee shall also discuss with the agencies USFWS, MassWildlife, MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC the specific control measures that may be approved, including potential chemical treatment. The Licensee shall, upon written approval from USFWS, MassWildlife, MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC provide a meeting
- 191 summary to the agencies USFWS, MassWildlife, MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC no later than May 1 and submit the memorandum, including any responses provided by the agencies USFWS, MassWildlife, MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC, to the FERC no later than July 1.
- 192 **2 CONTROL MEASURES FOR EXISTING INVASIVE INFESTATIONS**
The purpose of undertaking active management and control measures is to eradicate, reduce, or contain (as feasible) invasive SAV beds at select locations for certain species where there is a reasonable expectation of success based on the best available science.
The Licensee shall allocate internal funds for the treatment of aquatic invasive plants including \$50,000 in Year 1 and \$10,000/year thereafter (subject to annual inflation adjustments in accordance with the U.S. Consumer Price Index as calculated from the date the license is issued) throughout the license term toward treatment of invasive aquatic plants identified as impairments in Barton Cove (MA34122). The Licensee is not responsible for treatment measures outside of Barton Cove. The invasive aquatic plants listed in the impairment include water chestnut, curly-leaf pondweed, Eurasian milfoil and fanwort. MassWildlife has also documented the presence of variable leaf milfoil. During the annual meetings mentioned above with USFWS, MassDEP, MassWildlife and the Licensee, and all the parties (USFWS, MassWildlife, MassDEP, the municipalities of Montague, Gill, Northfield, and Erving, Massachusetts, on the Connecticut River, and the CRC) shall agree on consider an invasive plant treatment plan for Barton Cove, to be agreed on and established upon written concurrence from all the parties. The Licensee shall manage the funds and implement remediation measures, within the constraints of the available funds, as directed by all the parties. USFWS, MassDEP and

194. [Seldon Gary](#)
February 13, 2025 at 4:25:40 PM
This is an EXISTING example of
FL needing approval from, ...
This is how 'they all' should be.
DEP and the other agencies
should have final say authority
over FL.

195. Seldon Gary

February 7, 2025 at 2:41:13 PM
 This is an EXISTING example of
 FL needing approval from, ...
 This is how 'they all' should be.
 DEP and the other agencies
 should have final say authority
 over FL.

196. Seldon Gary

February 22, 2025 at 10:45:22 PM
 Again, move the decision
 making power away from the
 Licensee, to 'all the parties'
 which is a group that does not
 include the Licensee.
 Are these the right agencies?
 Anyone missing? FRCOG,
 Montague, Gill, Erving,
 Northfield?

⁷³ The amount allocated is for "treatment," as specified. It does not include the Licensee's costs for all other components of this Invasive Species Management Plan.

Page 112 of 117 ~~MassWildlife~~. The Licensee and its contractors shall comply with all provisions of this Invasive Species

Management Plan, unless otherwise agreed to ~~with~~by all the parties noted above.

By February 1 of the year following the control work, the Licensee shall provide a summary memorandum, including locations, methods, amount and percent of total removed or treated in Barton

Cove, maps, and geospatial data in kml/kmz format) to ~~the USFWS, MassWildlife and MassDEP~~all the parties. The Licensee shall meet (remotely or in-person) with USFWS, MassWildlife, and MassDEP to discuss control work undertaken the previous year, and any recommended modifications to the control approach(es) in Barton Cove for the current year. The control activity memorandum can be combined with the annual early detection report (Section 1.3) and both can be discussed during the same annual agency consultation meeting.

Additional locations and/or invasive species may be added to known locations and target species for future control work based on information obtained through the baseline (Section 1.2) and annual

195 (Section 1.3) surveys, in consultation with ~~the USFWS, MassWildlife, and MassDEP~~ all the parties. Annual control

196 activities in Barton Cove may be reduced, eliminated, or suspended, based on monitoring data and agency concurrence, written concurrence from all the parties.

3 ACTIVITIES TO PREVENT THE SPREAD OF INVASIVE PLANTS

The following activities shall be performed by the Licensee in order to assist in preventing the establishment, and/or spread, of terrestrial and aquatic invasive plant species.

3.1 Activities Associated with Daily Operations and Routine Maintenance

1. 2. 3. 4. 5. 6. 7. The Licensee shall continue to maintain Project grounds in a manner that helps prevent the introduction and spread of invasive plant species within the Project boundary, as provided below.

The Licensee shall not actively plant any terrestrial plants listed under the noxious weeds in the United States Department of Agriculture Natural Resources Conservation Service Plants Database, which incorporates plants listed by the Massachusetts Invasive Plant Advisory Group. The Licensee shall monitor areas of disturbance caused by routine operation or maintenance activities within the Project area to ensure that invasive plant species do not out-compete desirable vegetation during the reestablishment phase. Where invasive species have been found to outcompete desirable vegetation during reestablishment, the Licensee shall treat infestations, as necessary, to eliminate or reduce the invasive infestation(s).

The Licensee shall instruct its work personnel to visually inspect all the Licensee's exposed boating equipment for attached invasive plant or animal species.

The Licensee shall clean and dry its boats and trailers that come in contact with the water following removal from the water. The Licensee shall remove any visible plants or animals before entering the water or leaving the site. Plants and animals are to be discarded in an upland area.

The Licensee shall post signage explaining the threats of nonnative aquatic species and steps to prevent the spread at formal and informal recreation sites within the Project area. Recreation sites include boat launches, environmental education facilities, picnic areas, trailheads, etc.

The Licensee shall participate in watershed-scale invasive species management groups and disseminate information and recommendations developed by the group to the public widely.

3.2 Activities Associated with Construction or Major Maintenance

Page 113 of 117 ~~3.2.1 Prior to Construction or Major Maintenance Activities~~

1. 2. 3. The Licensee shall consult with MassWildlife regarding the best management practices (BMP)

197. Seldon Gary

February 23, 2025 at 10:03:20 PM

Again, move the decision making power away from the Licensee. Anyone missing? FRCOG, Montague, Gill, Erving, Northfield?

197 | to be employed, and ~~implement~~ obtain written agreement from MassWildlife regarding which activity specific BMPs to implement to help prevent the introduction and/or spread of invasive plant species within the area associated with the activity to be performed.

Workers shall clean, drain, and dry boats and trailers that come in contact with the water following removal from the water.

Workers shall remove visible plants or animals before entering the water or leaving the site.

Plants and animals are to be discarded in an upland area.

3.2.2 During Construction

1. 2. 3. 4. 5. Workers shall be trained to identify invasive plants and informed of the importance of infestation prevention.

Construction equipment shall be surveyed and equipment entering the work area shall be cleaned/washed before allowing the equipment to enter an invasive-free area.

Invasive plants that could potentially be spread by construction equipment or workers shall be removed. Along access roads, invasive plants shall be identified and controlled to avoid introducing them into invasive-free areas.

Gravel and fill shall come from invasive-free sources to avoid introducing invasive vegetation to the construction site, whenever practicable.

Certified invasive-free straw, mulch, fiber rolls, and sediment logs shall be used for erosion and sediment control, whenever practicable.

3.2.3 During Seeding and Planting

1. Whenever possible, soil amendments (if any) and mulches shall be obtained from invasive-free

2. 3. 4. 5. 6. 7. 8. sources.

The Licensee shall use only native seed mixes for reseeding disturbed areas, whenever possible.

Seeding and planting operations and maintenance shall be conducted in a manner to promote vigorous growth of desirable vegetation and discourage invasive species.

Bare ground shall be seeded as quickly as possible following disturbance.

Seeded sites shall be monitored for infestation by invasive plant species.

Identified invasive plant species at monitored sites shall be treated in the first full growing season.

Mulch shall be used to limit the amount of unwanted seed sources reaching bare soil, whenever possible.

The Licensee shall ensure that all construction contractors are aware of, and comply with, the terms listed above.

3.2.4 Post Construction

1. 2. The Licensee shall monitor any areas of disturbance caused by construction activities on lands owned by the Licensee within the Project boundary as needed to ensure that invasive species have not out-competed desirable vegetation during the reestablishment.

Where invasive species have been found to outcompete desirable vegetation during

Page 114 of 117 reestablishment, the Licensee shall treat infestations, as necessary, to eliminate or reduce the invasive infestation(s).

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Appendix H

Bald Eagle Protection Plan

Page 116 of 117 Bald Eagle Protection Plan

The purpose of this plan is to guide the Licensee's management and maintenance of lands at the Turners

198. Seldon Gary
February 23, 2025 at 9:49:56 PM
Add specificity, close loopholes.
199. Seldon Gary
February 23, 2025 at 9:40:13 PM
Close loopholes.
200. Seldon Gary
February 23, 2025 at 9:49:29 PM
Add specificity, close loopholes.

Falls Project and Northfield Mountain Project over the new license term for the protection of bald eagles.

Although bald eagles have been removed from the endangered species list, bald and golden eagles are still protected under multiple federal laws and regulations including the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Bald eagles winter along the Connecticut River in the Project area. Bald eagles are known to perch in riverbank trees and forage over the Connecticut River in the Project vicinity. As part of licensing, several bald eagles, adults and juveniles, have been observed perching or foraging in the Turners Falls Impoundment (TFI) and Northfield Mountain in both 2014 and 2015, and two occupied bald eagle nests were located within the study area. These nests were found downstream on Third Island (below Cabot Station), near Smead Island, Barton Island in Barton Cove, and along the east bank of the TFI across from Stebbins Island in the upper reaches of the TFI. Since the study, the Licensees staff at the Northfield Mountain Visitor Center have provided anecdotal information on two additional eagle nests located within the TFI. One is located in the vicinity of Kidd's Island either on the Island or the eastern shore in the Town of Northfield and one in Turners Falls, on the hillside in the general vicinity of the Turners Falls Airport runway.

Protection Measures

Given the nature and scope of Project operations, no adverse effects on bald eagles are anticipated. In the event that tree removal or construction activities are necessary at the Project, the Licensee **shall provide one** month prior notice to MDFW and USFWS along with written agreement to implement the conservation measures described below to avoid effects to bald eagles.

Prior to any tree clearing within the Project boundary or areas immediately adjacent to the Project boundary by the Licensee or its contractors, the area to be cleared shall be observed for bald eagle nests by the Licensee. **If practicable, the Licensee should** also survey for nests within 660 feet of the proposed clearing because nests adjacent to clearing may also be indirectly affected. If such nests are discovered, the Licensee shall consult the Massachusetts Division of Fisheries and Wildlife (MDFW) and the United States Fish and Wildlife Service (USFWS) prior to tree-clearing activities and the tree-clearing activities shall be performed in accordance with the applicable regulations and guidance (*i.e.*, the National Bald Eagle Management Guidelines, USFWS 2007, or as amended).

During the nesting season (January 1 through September 30), no tree clearing shall occur within 330 feet of, and no construction activities shall occur within 660 feet of, any known bald eagle nests by the Licensee or its contractors. The National Bald Eagle Management Guidelines advise against conducting external construction and land clearing activities within 660 feet of bald eagle nests during the breeding season.

Additionally, the Guidelines recommend maintaining a year-round buffer between nests and tree clearing of at least 330 feet and a year-round buffer between external construction and nests of either

330 or 660 feet, depending on the construction's size, visibility, and local precedence, **shall be followed**. For any project-

related construction activities, work that requires blasting or other activities that produce extremely loud noises within 1/2 mile of active nests shall be avoided. The Licensee shall consult with the MDFW and USFWS regarding tree clearing or construction activities that cannot meet these conditions.

Page 117 of 117

From: [Clark Sellars](#)
To: dep.hydro@mass.gov
Subject: CT river Hydro license
Sent: 2/23/2025 7:35:23 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello I support the recommendation from the Ct River Conservancy for future Hydro Licensing. My family for generation have lived and play on our beautiful River. Please help tp protect our River.

Sincerely, Clark Sellars

From: [Patricia Serrentino](#)
To: dep.hydro@mass.gov
Subject: Firstlight 401 WQC
Sent: 2/21/2025 3:27:58 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

To whom it may concern –

FirstLight Power (FirstLight) has filed an application with the Federal Energy Regulatory Commission (FERC) to relicense the Connecticut River hydroelectric facilities in Turners Falls and Montague and the pumped storage facility in Northfield under the Federal Power Act, 16 U.S.C. § 797(e). As a part of the federal relicense application filed with FERC, FirstLight must also apply for a 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection (MassDEP). The following are my written comments concerning the 401 WQC certification for Turners Falls/Montague dam and hydropower projects and the Northfield pumped storage project.

FirstLight has proposed a 50-year license period. This is too long. The current default license term is set at 40 years by the Federal Energy Regulatory Commission (FERC) policy. FirstLight does not give sufficient justification for this extended license period, and some aspects of the project (e.g., fish passage) have unknown performance outcomes that may require reconsideration and relicensing at a period of less than 40 years.

The Northfield Mountain Pumped Storage Project will kill every entrained fish smaller than the proposed barrier net mesh size. Past failures of previous net exclusion schemes have demonstrated that this technology is not viable or effective long-term. FirstLight's offer to compensate for fish losses monetarily does not take into account the full cost of these losses as a resource, does not compensate biologically or ecologically, and is an outdated mitigation strategy.

FirstLight has proposed a period of 10 years before fish passage modifications/improvements are fully implemented and operational. This is too long a time period; most of the structures and technologies proposed are conventional and should not take 10 years to permit, design, and construct. An implementation period of 5 years (maximum) is a more reasonable interval.

Sincerely,

- Patricia Serrentino

Wildlife Ecologist
 [REDACTED]
 Greenfield MA 01301
 [REDACTED]

From: tommy.stang
To: dep.hydro@mass.gov
Subject: Firstlight 401 WQC
Sent: 2/24/2025 4:35:46 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear MassDEP,

We are a group of people living in the Connecticut River watershed. Some of us were born along the banks of the river, others arrived here later, but all of us reside in and with the ecosystems this river creates and sustains.

It is our proximate desire to have the WQC denied and for the DEP to request FERC to end the annual license extension. Ultimately, we wish to see the entire ecocidal monstrosity that FirstLight operates and profits from be decommissioned and that the river be allowed to flow freely, to reach levels where it can once again meander through wetlands, directed by beavers, and made resilient once more to face a changing climate. Wetlands will be crucial reservoirs of life during the coming droughts, and letting the river flow freely will support them.

The Northfield Mountain Pump Storage facility reverses the flow of the largest, most ecologically important river in the entire region by forcing billions of gallons of water through turbines that kill all macroscopic life. Worse, the energy used to facilitate this ecocidal process is predominantly fossil fuel in origin. The water, after warming in the sun, is then released to generate a mere portion of the original energy used. This release is not timed so as to provide an emergency backstop for an otherwise collapsing grid, despite the claims of its operators. It is released when it is profitable for FirstLight, wholly owned by a Canadian Crown corporation. Only in a world that renders a living ecosystem into an inert "conveyor belt" (to use the DEP's own language from the draft WQC) could a Canadian Crown corporation be considered a legitimate "stakeholder" in this matter, but since that is the world that we live in, we find it necessary to call into question the operating principles and motives of this corporation. They exist to make money, they do not exist to bolster the energy security of Massachusetts nor the ecological health of the Connecticut River watershed.

And the "thing" they make money off of is a living, dynamic ecosystem. An ecosystem that FirstLight does literally nothing to support. There is no reciprocity in their relationship with the river, a river that sustains us and is the foundation of life here. They "provide" tax revenues to a handful of municipalities, but those revenues merely represent a fraction of what FirstLight takes from this river. To return a portion of something that was taken is neither generous nor reciprocal. This is naked extractivism, and there is absolutely nothing environmentally sound about it. Any attempt to cast it as such, including by the governor herself, is little more than greenwashing. You are the Department of Environmental Protection. Act like it. Deny the water quality certificate and request FERC to end the annual license extension.

The grounds upon which to deny the WQC are numerous. The portions of the Connecticut River both above and below Turners Falls Dam (TFD) are currently listed as impaired (not meeting state water quality standards) for various reasons, including dewatering, flow regime modification, and streamside alteration—impairments that are attributable in whole or in part to the operations of the FirstLight Projects. Mass DEP's 401 draft does not meet its burden for showing how these portions of the river will move from "impaired" status to "attainment" status under the proposed renewed FERC license, nor does it adequately put the monitoring power in the hands of affected communities and organizations whose primary motivations are assuring the health of the river and the wider regional ecosystem, rather than making a profit from it.

The Turners Falls Impoundment (TFI) experiences significant fluctuations in river height due to the Northfield Mountain Pumped Storage facility ("NMPS"), leading to severe shoreline erosion. This 20-mile stretch of the Connecticut River, serving as the lower reservoir for the storage facility, suffers from erosion exacerbated by the facility's operations, which vary the water level by up to five feet. Historical data and studies, including reports by the Army Corps hired expert, Dr. Evan Detheir, confirm that the pumping activities are a significant cause of the erosion. The 401 Draft Special Condition # 10 requires FirstLight to keep the river height between 178.5 and 185 ft. However, the Condition also includes discretionary events when FL is allowed to operate between 178.5-177.5 ft a shocking 30 times per year. Dropping to 177.5 is dangerous for boaters at Barton's Cove and also does not meet the designated use of the waters for recreation.

For the mile-stretch of river below TFD to Station 1, the proposed minimum flows of 500 cubic feet per second ("cfs") from July 1 – Nov. 15 each year are inadequate to protect and maintain Aquatic Life Uses (ALUs), most notably impacting state and federally listed Shortnose Sturgeon, as well as sensitive macroinvertebrate populations. 500 cfs

will allow for only 10% of maximum available habitat for macroinvertebrates, among other indicators of not supporting this use. A minimum flow of at least 1,400 cfs from July 1 through Nov. 15 is needed to protect ALUs as well as recreation, which is currently impaired in that section of the river.

Rather than base its proposed minimum flows on protecting the most sensitive ALUs, MassDEP is basing its proposed minimum flows on two non-aquatic, rare plant species that would not exist in the mile stretch below TFD except for the years of impairment due to dewatering. Additionally, DEP did not include any scientific evidence or classification tool for how these plants are considered aquatic. Further, DEP fails to include any information about whether the plants can be transplanted to another location or if that option has even been evaluated. DEP and other state agencies, such as the Natural Heritage Endangered Species Program (NHESP), must make more information available to allow the public to make informed comments about the plants and for DEP to adequately consider their relevance, if any, to FirstLight's 401 Application.

The new eDNA data released in August 2024 that shortnose sturgeon are present above Turners Falls Dam must be taken into consideration for the 401 WQC. This federally endangered fish must be protected and the new found research is timely as the 401 draft has yet to be published. This crucial piece of information must not be left unattended to. One example is for the Barrier Net - no scientific studies of the efficacy of the Barrier Net for sturgeon have been completed.

Further absent are any provisions mandating decommissioning plans and financial assurances from FirstLight for when the facilities are ready for retirement and removal, which should be soon. This measure is crucial to prevent further water quality degradation and ensure that Massachusetts taxpayers do not bear the financial burden of decommissioning. Given the inevitable end of these projects' useful lives as energy producers and reserves, we wish to stress the importance of ensuring that funds for decommissioning are readily available.

Licensing, if at all, should be a maximum of 15 years. According to the Fourth National Climate Assessment put out by the U.S. Global Change Research Program (<https://nca2018.globalchange.gov/chapter/18/>), the Northeast is projected to be more than 3.6 degrees F warmer on average than pre-industrial times **by 2035**, as the Northeastern US is warming faster than any other region in the lower 48 states. This rise in average temperature negatively affects aquatic life by raising the temperature of the river, increasing mortality throughout the seasons, and especially during heat waves. The rising river temperature is further compounded in shallower waters, which is necessarily tied to the periodic pumping of the Northfield Mountain Pump Storage facility, as well as is the case below the Turners Falls Dam. It would be egregiously irresponsible to re-license these operations for the proposed 50 year period, as this entirely negates the reality that we will be experiencing drastic changes in our regional climate early on in this timeframe. Operations that demonstrably negatively affect the health of the river ecosystem that our entire valley is built around should not be given carte blanche permitting for "business as usual" operation for a full 5 decades into the future against the backdrop of changes we already anticipate, and know will be exacerbated by their usual operations. If any re-licensing is at all considered, a maximum of 15 years should be licensed, allowing the State to be nimbly adaptable to the changing circumstances we are up against, for not just the health of the river, but the health and resilience of the entire region.

We appreciate your time in reading this. Ultimately, as the Department of Environmental Protection, we are merely asking you to live up to your name. The health of our communities, our bioregion, and resilience into the future are what is at stake. Thank you.

Sincerely,
Tommy Stang
Westhampton, MA

Elizabeth Stefanik
Attn: FirstLight 401Draft WQC,
MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114.

**Re: Comments on MassDEP's Draft Water Quality Certification for the
Northfield Mountain Pumped Storage (NMPS) Project FERC Re-licensing**

Dear Ms. Stefanik:

I am submitting comments, below, on the January 24, 2025, MassDEP Draft Water Quality Certification for FirstLight Power, specifically with respect to the Northfield Mountain Pumped-Storage Facility's FERC re-licensing.

Sincerely,

Gerald M. Szal
Aquatic Ecologist
Member of Western MA Rights of Nature

Topics covered in this document:

Part 1: Federal Clean Water Act Violations by NMPS

Part 2: Large-Scale, Thermal Releases from NMPS station documented via satellite

Part 3: Violations of MassDEP's Surface Water Quality Standards (SWQS)

Part 4: Options outlined in the MA SWQS when Aquatic Life Uses are not met

Part 5: Suggestions to mitigate impacts to fish

Part 1:

Federal Clean Water Act (CWA) Violations

Operations of the Northfield Mountain Pumped-Storage Station (NMPS) **Violate all three of the Primary Goals of the Federal Clean Water Act**

The objective of the Federal Clean Water Act (33 U.S.C. § 1251 et seq.) is: the restoration and maintenance of the chemical, physical and biological integrity of the Nation's waters.

The comments below begin with the physical integrity goal. This is because the chemical and biological integrity violations are a result of the harm that the facility's operations cause to the physical integrity of the system.

Components of this violation are described below.

Physical Integrity Violations and the Destruction of Aquatic Habitat by NMPS Operations

Background:

There are several aspects of the Physical Integrity of a river.

A.1 The first is the **hydraulic integrity** which relates to all the physical aspects of the water column itself: the three spatial dimensions and the temporal component of how these change over time. Have the natural daily and seasonal variations in these been altered by NMPS operations? Width and depth are two spatial dimensions of hydraulic habitat. The third is the waterbody's connectivity with other hydraulic components of the system. Are there obstructions or diversions that prohibit or impede the natural connection with other waterbodies, or upstream/downstream connections that would interfere with the natural movement of the waterbody itself or with the aquatic biota that live within and adjacent to it?

A.2 The second is the **substrate integrity** within the wetted area, i.e., the sediments in the river itself. A special subcomponent of that structure, especially in larger rivers is the **Littoral Zone**: that area close to the shoreline. Typically, in healthy systems, sunlight reaches to the bottom here. It is often the most productive zone of the wetted area with regard to plants, macroinvertebrates and fish. Has the integrity of the substrates or of water clarity, especially regarding the Littoral Zone, been altered?

A.3 A third aspect is the **Riparian Zone**, that area adjacent to the river which includes the riverbanks. In a natural system, semi-aquatic plants and water-tolerant species grow there that help to stabilize the banks and prevent non-point runoff with their root systems. Native plants in this zone also provide habitat for other indigenous organisms that have evolved in the area in question. When native plants are present, biodiversity is typically much higher and more resilient than when alien invasive species are present. The latter often form vast areas of monoculture that have little value to indigenous species. Has the Riparian Zone system been disrupted?

We look at all three of these aspects of Physical Integrity below regarding NMPS operations.

Physical Integrity: Hydraulic Integrity and River Flow Reversals

An inland river segment whose flow direction is reversed almost every day can no longer be considered to have physical “integrity” as an inland river.

NMPS operations, which have caused enormous river-flow reversals, have destroyed that aspect of the Connecticut River’s integrity for much of the river’s length between the Turners Falls dam and well beyond the Rt. 10 Bridge in Northfield. Flow reversals, caused by the operations of the NMPS intake and discharge, extend over at least 8 miles of the river segment between the Vernon Dam in Vermont and the Turners Fall dam in MA (see pg. 4 below). This segment, which is sloshed backwards and forwards almost every day, has lost its integrity as a “river” in the true sense of the word.

Flow reversal is not natural and destroys habitat:

Plant Habitat: Riverine plants have not evolved to sustain almost daily flow reversals.

This is well known to Stream Restoration Botanists and others involved in repairing injured riparian and littoral zones. In planting new vegetation, the restoration workers must orient the root-wads in such a way that they will not be washed away by the downstream flow of the river (see: https://pdhonline.com/courses/c734/ncStreamRestoration_guidebook.pdf). A back-and-forth, bi-directional movement of river flows is much more likely to disrupt these plantings, as well as indigenous aquatic plants, than a unidirectional flow.

Plants that are naturally found in river and stream environments are physically rooted in such a way to withstand *downstream* flows. Back and forth flows can result in the loss of the rooted vegetation that protect the river bank from erosion. Unlike plants that grow in estuarine rivers, plants that grow in lotic, inland waters have not evolved to withstand this sort of unnatural flow reversal. The collection of native plant species that naturally grows in an inland river system will be less-likely to root, and less likely to remain rooted in a river with a bidirectional flow than in a natural system with a uniform, unidirectional flow.

The shoreline in certain areas within the river reach between the Vernon and Turners Falls dams is now populated with alien invasive plants, documented in past comments to FERC (see: Written Public Comments of FRCOG 401 WQC Comments and Recommendations June 3, 2024 at: <https://www.mass.gov/info-details/401-wqc-for-the-firstlight-hydroelectric-re-licensing-project#public-involvement-in-401-wqc-process->). The most probable reason for these invasives taking foothold is that the native species have long ago succumbed to the un-natural back and forth flow, and drastic changes in river height, that are caused by the NMPS intake and discharge. Fifty-two years of this (the facility began operations in 1972) has created more and more open soil space where the native species have been torn out, allowing alien invasive plant species to take hold. Invasive plant species are extremely opportunistic and often out-compete native species when soil space becomes available.

Macroinvertebrate Habitat: Macroinvertebrates that live in streams and rivers have not evolved in systems where water flows change direction almost daily. Flow reversals are especially problematic for macroinvertebrates that attach themselves to substrates or that rely upon a unidirectional flow for feeding.

Fish Habitat: Anadromous fish that need to move upstream will spend time and energy, during flow reversals, moving in the wrong direction. Out-migrating fish will also expend more energy and time moving to their destination.

Out-migrating fish: In addition, it is unclear the degree to which the intake of about 4 Billion gallons a day¹ at a rate of about 15,000 cfs acts as an *attractant* flow to out-migrating fish. The latter is a **connectivity** issue that has not been resolved and needs further study prior to giving the facility a 50-year license, and especially with regard to allowing the facility to expand their operations by approximately an additional Billion Gallons per day (3,000 acre-feet) as allowed by this Draft WQC.

Extensive Flow reversals have been created by the NMPS discharge:

Documentation for the statement above is provided from the USGS Northfield gage on the Connecticut River, located just upstream of the Rt. 10 Bridge on the western shore. **Figure 1** below depicts the “discharge” (i.e., the flow of the river in cubic feet per second [cfs]) of the river at that site over the period June 6 through June 11, 2020. Note that there is a vertical, dotted line on the graphic between June 6 and June 7. The discharge flow for that point on the graphic is given at the top of the graphic: -3550 ft³/s. This flow occurred at 10:30 am, EDT.

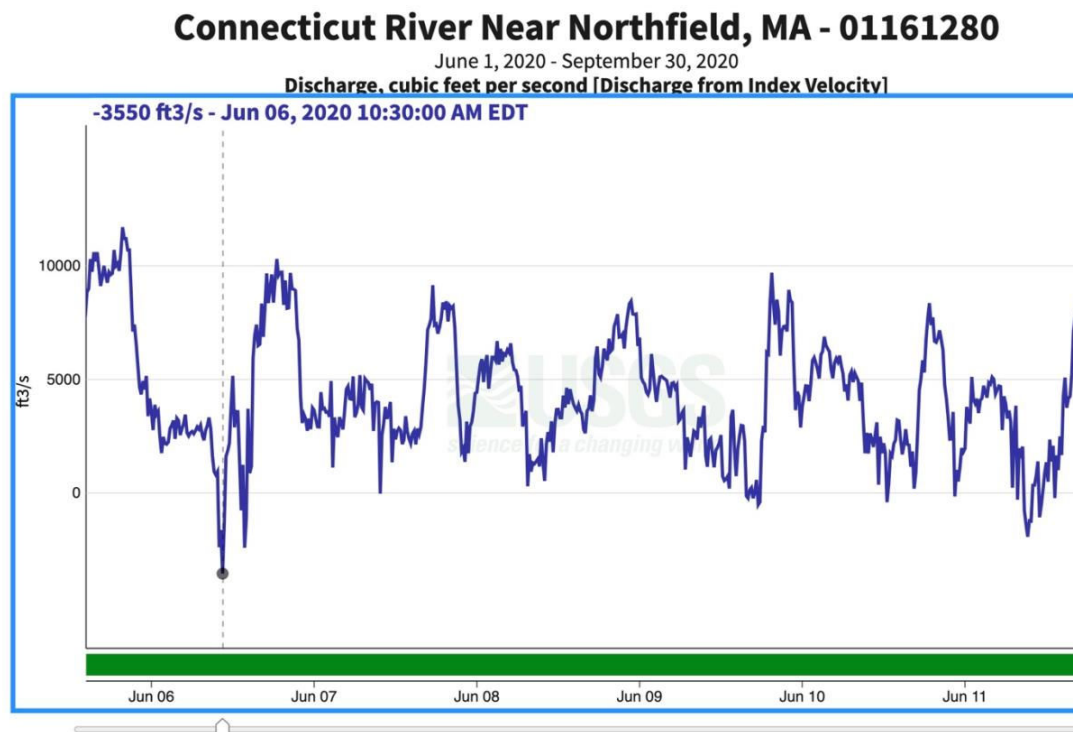


Figure 1: Documentation of river flow reversal at the Northfield USGS gage, located about 5.7 miles upstream of the NMPS discharge site in early June 2020. Note that the ft³/s (cubic feet per second: the river’s flow, or “Discharge”) falls below zero on June 6. This indicates a reversal in the direction of river flow.

The minus sign accompanying the -3550 ft³/s value in Figure 1 denotes that **the river’s flow was reversed**. River flow was reversed for about an hour, then the river began to flow downstream again only to have another flow reversal about 2 hrs. later.

The data referenced above indicate that the reversals occurred over the entire 5.7 miles between the NMPS discharge site to, and beyond, the USGS gage at the Rt. 10 bridge.

The NMPS maximum discharge rate (20,000 cfs) and its maximum intake rate (about 15,000 cfs) often far-exceed the natural, downstream flow of the Connecticut River. On certain days and times of the year (such as during drought periods; but also see **Figure 2** below), the NMPS discharge rate exceeded the flowrate of the Connecticut River, sometimes by several times (see the link to the Northfield USGS gage² information where this is apparent). Much of the discharge flow from the facility moves downstream, but based on the USGS data a significant portion moves upstream as well.

How often do flow reversals of this magnitude occur?

To provide the reader with a visual of the frequency of flow reversal at the Northfield USGS gage, I took a screen shot of the discharge information from the USGS gage near Northfield, MA for the period mentioned (see **Figure 2**, below). Note the zero line for ft³/s on the right-hand Y-axis and the large number of events where the discharge flow drops below the zero line. This, and the data at the USGS online site provide documentation that over the period from June 6 through September 30, 2020, **there were more than 88 flow reversals**.

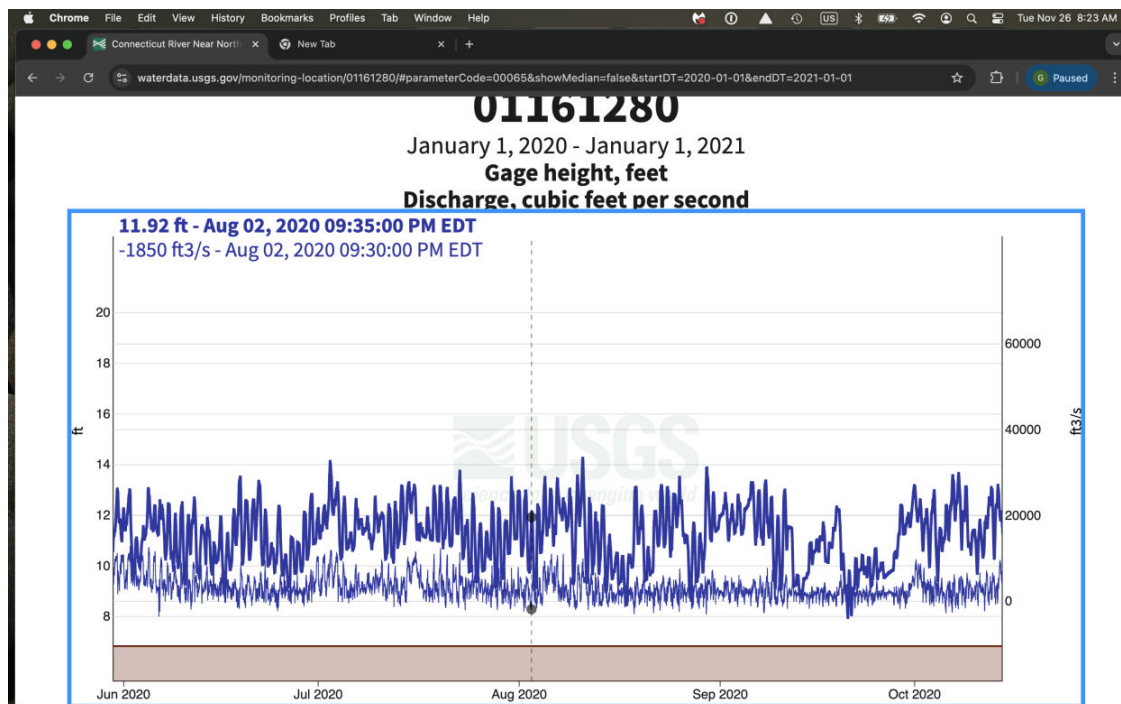


Figure 2: Data from the USGS gage near Northfield, located about 5.7 miles upstream of the NMPS station intake and discharge from June 2020 through October 2020.

NMPS operations also pull downstream waters upstream:

Documentation for this is anecdotal, but believable, give its source. Dr. Boyd Kynard, a fisheries biologist and specialist in Shortnose Sturgeon, found that his aluminum fishing boat, located near the French King bridge at the time, began “moving upstream at a pretty good clip” (reported in the Commonwealth Beacon, March 17, 2018. See: <https://commonwealthbeacon.org/opinion/this-energy-storage-is-tough-on-connecticut-river/#:~:text=Both%20Northfield%20and%20federal%20officials,up%20to%20the%20mountain%20reservoir.>

) That this would take place is logical considering the enormous intake rate of the NMPS station (at times up to 4 Billion gallons during the evening and nighttime hours) even though one might suspect that most of the water flowing into the intake would be coming from upstream. The distance (based on Google Maps) from the French King bridge to the NMPS intake site is about 1.25 miles.

At the same time this pull of downstream water occurs, the facility is de-watering upstream waters and causing enormous fluctuations in water levels. Effects on river height of both intake and discharge will become more apparent in figures below.

The total areal extent of flow reversal caused by NMPS operations is over 8 miles.

If we add the 5.7-mile distance from the upstream “push” of the NMPS discharge to the USGS station at the Rt. 10 Bridge to the upstream “pull” of the intake from the French King bridge to the intake, we can **conservatively estimate** that flow reversal occurs over at least 7.95 miles, approximately 8 miles based on the information provided above.

It is undoubtedly much more than that because the flow reversal at the USGS gage site documents that flow reversal can last for over two hours on some days. That must mean that the flow reversal travels farther upstream. In addition, I know of no data documenting the distance downstream from the NMPS intake site, only the estimate based on Boyd Kynard’s statement, and it may be that the flow reversal south of the NMPS intake site stretches well-beyond the French King bridge.

Physical Integrity: Hydraulic Integrity and Rapid Changes in River Height

Figure 3 below depicts daily changes in the height of the Connecticut River at the USGS gage near Northfield, near the Rt. 10 bridge. Some of these river height fluctuations are as high as 4 feet, and these are happening 5.7 miles upstream of the NMPS intake/discharge site. I could find no gage information that would provide river height changes nearer the intake/discharge site, but one would surmise that they would be much larger than the 4 ft. mentioned above.

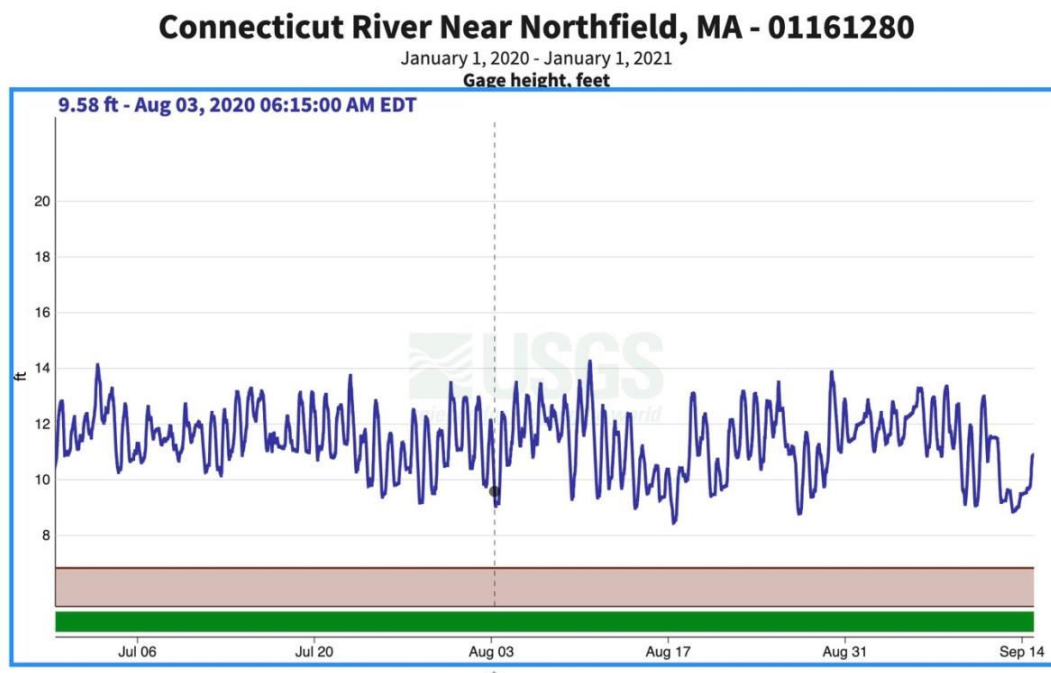


Figure 3 (above): Changes in river height (gage height) in feet (marked ft in Y axis) at the USGS gage, near the Rt. 10 bridge from early June through mid-September 2020.

Loss of Littoral Zone Habitat caused by unnatural river height fluctuations:

I want to emphasize the importance of the Littoral Zone to riverine habitat and biota. Littoral Zone habitat is often the richest and most biodiverse zone of a lotic system. Due to NMPS operations and it is constantly being destroyed by the almost daily dewatering of the plants, invertebrates and other aquatic life in this area of the river.

Unnatural changes in river height, such as those caused by NMPS station's operations, result in a loss of Littoral Zone habitat. This is because many aquatic organisms living in inland rivers have not evolved in environments that undergo rapid and large changes in water column height (as one might see in a tidal river where organisms have evolved to withstand these changes). These are not tidal organisms that have evolved to undergo dewatering events.

An almost daily loss of water height leads to the desiccation of sessile organisms that live near the shore because they will lose their aquatic habitat for many hours over the day. Loss of habitat also occurs for non-sessile organisms that live in the Littoral Zone (e.g., case-building caddisflies, case-building midges, etc.). To avoid the desiccation of their gills which leads to suffocation, these and certain other aquatic invertebrates must leave their constructed homes, depleting this zone of its biota. Even oligochaetes would have problems with frequent dewatering.

Loss of periphyton as well as rooted submergent and emergent vegetation will also occur due to exposure and desiccation from dewatering events. Periphyton is a food source for many macroinvertebrates. Native aquatic vegetation in Littoral Zones builds habitat complexity in these areas and adds to the importance of the Littoral Zone as nurseries for young fish. With dewatering, these plants can become desiccated and die.

Littoral Zone Habitat can be quite broad in certain sections of the river.

The Littoral Zone in certain river sections may be quite small, for example if the slope of the riverbank is steep. In other areas it can be quite broad, especially if the river is shallow in that area or if the Littoral Zone itself has a gradually-sloping bed (see 4 below). In the latter situation, a small change in river height can lead to the dewatering of a broad band of Littoral Zone. If the river height fluctuation is large, it can lead to an extreme loss of Littoral Zone habitat.



2024 (March): Looking north on Bathory/Gallagher site from the access road
Stone and dirt has been eroded and logs with root wads have become exposed and dislodged
since the 2013 restoration project installation.

Figure 4 (above) taken from the Public Comments on the FERC re-licensing project.

Fish strandings may also result from large and rapid fluctuations in water levels. Small fish species, as well as juveniles of larger fish, often use shallow shoreline areas as habitat partly to avoid predation. They also use these areas to feed on small invertebrates that can be found in abundance in these areas partly because river velocities are reduced there. Depending on the morphology of the littoral zone, a rapid loss of river height can leave fish stranded in small pools cut off from the main river and expose them to avian, reptilian or mammalian predation. Stranding can also kill fish outright from excessive heating and/or desiccation. Strandings of much larger fish, such as the endangered Shortnose Sturgeon, have been documented in areas below the Turners Falls dam when water levels quickly change.

Physical Integrity: Hydraulic Integrity and Connectivity

NMPS' intake operations have partially shut off downstream connectivity for American Shad and other fish. To what degree this is true is almost completely unknown because the studies to evaluate this issue that were conducted by FirstLight's consultants have been either inadequate, or conclusions drawn from these studies were based on inappropriate assumptions.

The stretch of river between the Vernon and Turners Falls dam is a nursery for American Shad. This is evidenced in the entrainment studies conducted by the facility's consultants in which eggs and larvae of American Shad were entrained by the NMPS intake. Because both eggs and larvae were entrained, one can assume that, if not entrained, these fish would have matured into the juvenile stage. The term "nursery" is used here to emphasize that the 20-mile stretch of river between the two dams mentioned above is used as "habitat"

by both larval and juvenile shad prior to their departure downstream and to the sea. Larvae have little ability to fight the current and can be readily pulled into the NMPS intake. Juveniles, though better able to swim, may not experience the pull of the facility's intake as anything unusual or dangerous, especially at night when visual cues may be scant or non-existent. These fish haven't evolved with pumped-storage intake pipes.

Entrainment of American Shad Eggs and Larvae:

There are several issues with these studies, notably:

- the amount of entrained water sampled was low (about a billionth of one percent in one study);
- the frequency of sampling during high egg densities was insufficient to ascertain the highest densities;
- though larvae were found outside of the facility's intake they were either not found (in the first study) or found in very low numbers (2nd study);
- because larvae are extremely fragile, a large percentage of them may have been ripped apart by the walls of the pipe or from simple turbulence and not have been detected as larvae by those looking through the samples collected, and this was not accounted for in the entrainment estimate;
- a theoretical population "curve" (similar to a bell curve of egg or larval density over time) was constructed from entrainment samples; because the top of this curve was set using the highest density of organisms captured in the sampling events, this assumes that a higher density would not have been found had the sampling been conducted every day; this assumption is invalid because all days were not sampled.

The last issue deserves further comment. FirstLight's consultants found that egg counts for American Shad (2015 study), or egg and larval counts (2016 study) were essentially nonexistent for much of the survey or found in numbers of 1 or 2 per sampling event. In the approximate middle of the sampling period, egg or egg and larval counts dramatically increased (an order of magnitude). In the 2015 study, when this happened, daily (instead of weekly) sampling should have begun to determine actual "peak" density, the most important number for estimating entrainment. It is unknown if during this time densities may have increased another one or more orders of magnitude. A similar situation arose in the 2016 study, where weekly sampling was taking place. As soon as high numbers began to occur, daily sampling should have taken place instead of weekly sampling. In both cases, it is most likely that higher egg or egg and larval counts would have been seen if daily sampling were conducted when high densities were first observed.

Each one of these issues is a reason for underestimating the true number of eggs and larvae entrained. Combined, their effects put any estimates based on these studies in question.

Entrainment of Juvenile American Shad:

Typically, juvenile American Shad move up and down in the water column on diurnal cycle, feeding on zooplankton. At night they are usually near the top of the water column and can be seen "dimpling" the surface while feeding. When conducting population studies on the juvenile stage, researchers typically catch juveniles at night via a net (a "push net") mounted on the front of a motorboat. During the night the facility draws in the water needed to fill the upper reservoir. Because of the juvenile's typical diurnal pattern of vertical movement in the water column and the facility's night-time withdrawals, NMPS will most likely be entraining juveniles that are near the surface of the water column. The diurnal pattern of movement was not considered but is important when attempting to determine the interaction between intake velocities in different water column heights that would affect juvenile entrainment potential.

In the fall of 2015, consultants for FirstLight studied the potential loss of out-migrating American Shad juveniles to the NMPS intake. Radio tags were attached to juvenile American Shad and consultants followed their progress downstream at several stations past (or through) the NMPS intake and past points farther downstream. A cohort of 77 radio-tagged fish were used to evaluate downstream passage. The passage rate, i.e.,

past NMPS, was estimated to be about 46% although only a much smaller percentage of the original 77 actually made it downstream to the area of Turners Falls.

Only three fish were “known” to be entrained into the intake pipe because their radio tags were detected upstream of (up the hill from) the turbines. Another 21 were detected in the area of the intake but then “**never detected again**”. The rest of the original 77 fish were also “not detected again”.

This failure to include the 21 fish that were detected in the area of the intake but “never detected again” as entrained fish is unjustified. The reader will see below that the radio tags on the fish could easily have been ripped off the fish as they went into and through the turbines. The consultants never evaluated the effect of movement through the turbines on the rate of radio-tag loss from the detection point at the intake to the detection point on the uphill-side of the turbines. This is quite an important step, and a failure to evaluate that loss puts the entire entrainment estimate in question. The only juveniles considered to have been entrained were those that made it through the turbines or whose radio tags alone went through the turbines. How many radio-tagged fish simply lost their radio tags in the intake pipe or in the turbines?

In addition to this, the study “results” are suspect to the degree that the entire study appears to have been a complete failure. The following text is taken from the 2015 report. The reader should be informed that the “tags” referenced here are the radio tags hooked to each fish with a fishhook through the top of their back the combination of which was so heavy that fish were observed swimming on their sides:

From the Discussion section of the study:

*“The weight of the tag appeared to affect swimming capabilities as shad were observed swimming with their dorsoventral axis oriented nearly parallel to the surface (tag-side down) as opposed to typical swimming orientation. Combined with handling stress, it is likely that the many of the tagged shad were unable to sustain normal activity following the tagging process. **Given these observations, the validity of the results of this study are left in question.** While some results were achieved it is likely that the inherent problems of handling and tagging juvenile shad had a negative effect on the effectiveness of the study and its findings. The limited results are likely inadequate to definitively determine route selection and travel times due to the effectively small sample size.”*

And:

*“Given the uncertainty of fish that were undetected in the reach, **a definitive estimate of entrainment using these radio telemetry results was not achieved.**”*

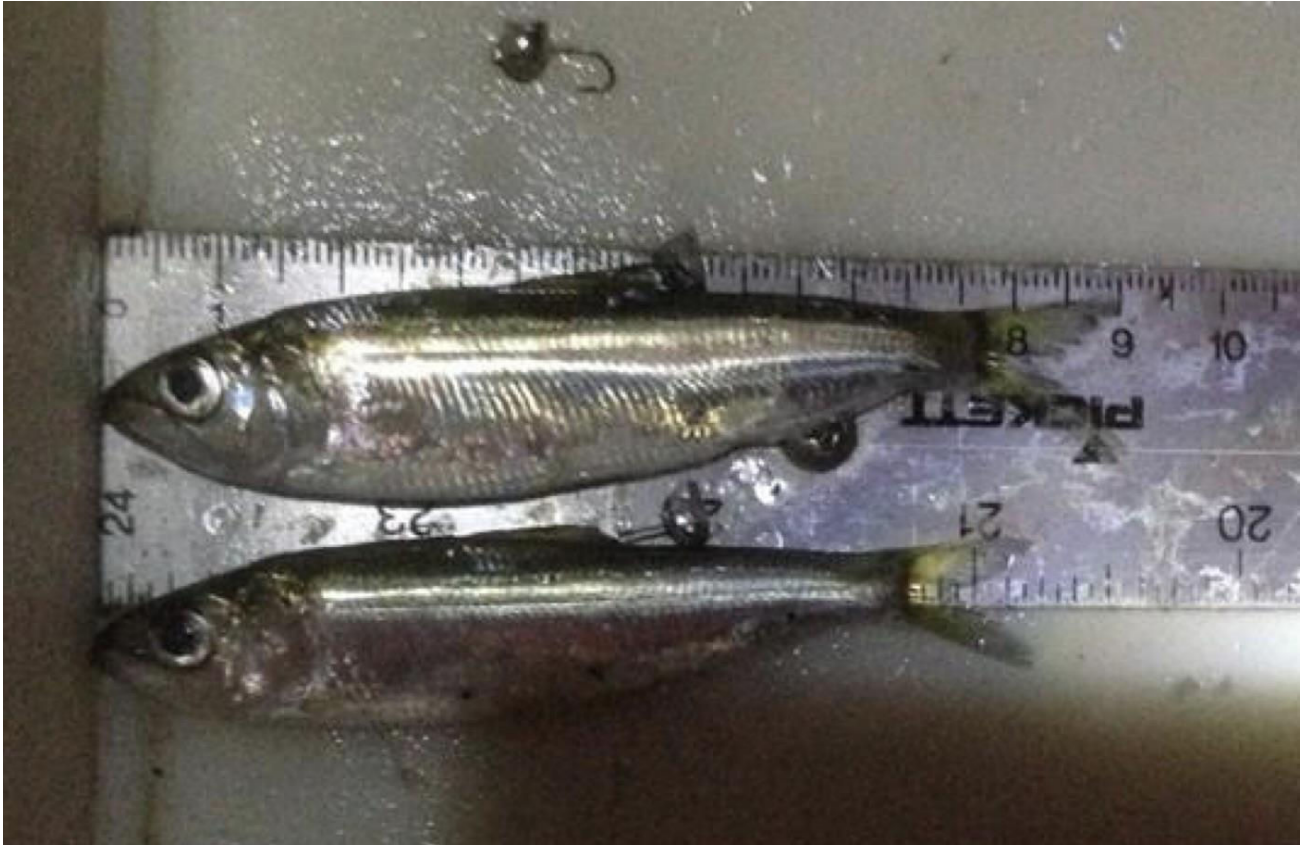


Figure 5 (above): Juvenile American Shad equipped with a “mock” radio tag. Radio tags actually used resulted in an inability of fish to remain upright, probably due to their excessive weight.

Did anyone at MassDEP read this study?

If so, how could the Department make the statement below, taken from the Draft WQC? (See pg. 29 of 117 of the Draft WQC; note: the “*change*” mentioned below is allowing NMPS increase its intake and discharge 25% per day beyond the 4 Billion Gallons/per day that they currently pull in and discharge):

“MassDEP has determined that this change, in combination with the TFI impoundment elevation restrictions discussed above, will have no significant impact on water quality, fish, plants, wildlife, endangered species, and erosion.”

With no valid studies to determine the effects of the *current* 4-Billion Gallon/day intake and discharge (at Max. Conditions) at NMPS on American Shad, the Department has taken the bold step of “determining” that an additional 25% increase in operations will have “no significant impact.”

It is clear that MassDEP’s determination was ill-informed.

One would expect more from MassDEP given the stakes at hand, i.e., a 50-year license.

Physical Integrity: Substrate Integrity and Littoral Zone Habitat

Due to the substantive rise and fall of the water column, there is an almost daily loss of soil from the river banks. This is a loss of a range of sediment sizes, but the very-fine-grained sediment loss can be seen in **Figure 6** below from data collected from the USGS gage that is near the Rt. 10 bridge, about 5.7 miles upstream from the NMPS station's intake and discharge.

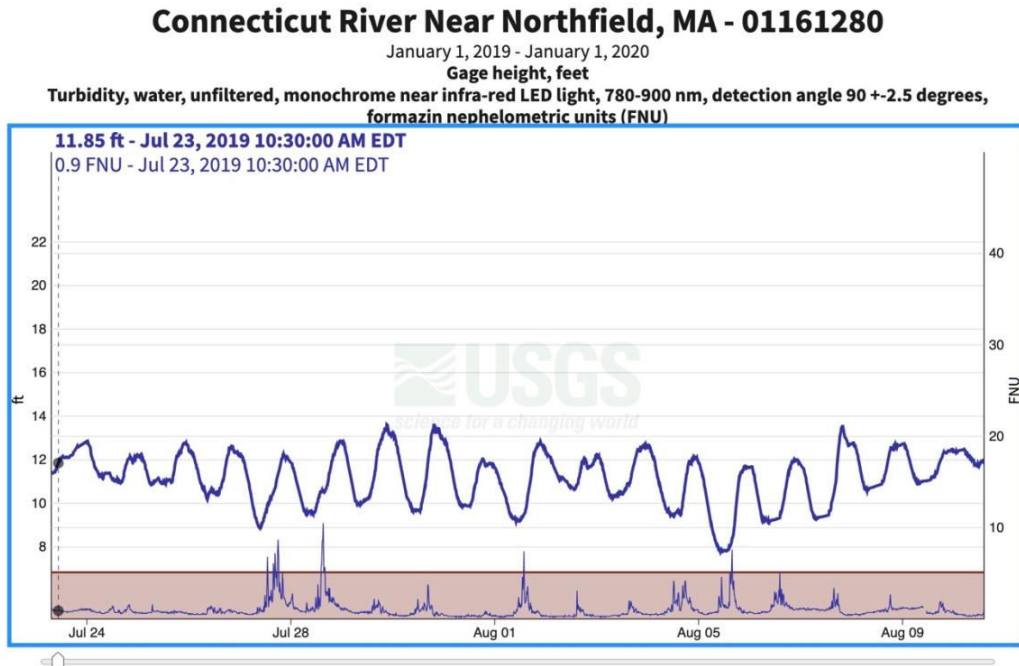


Figure 6: Daily changes in river height (Gage height) and daily spikes in turbidity in the Connecticut River over the period July 24 through August 9, 2019. The graphic is from the USGS gage in Northfield, MA (5.7 miles upstream of the NMPS intake and discharge).

The spikes in turbidity seen above are directly associated with the NMPS intake/discharge cycle:

In the graphic above, one can see the rise and fall of river height (measured in ft. on the left-hand Y axis) which is the thicker, upper line in the graphic. One can also see turbidity (measurements on the right-hand Y axis) which is depicted in the lower, thinner line.

Note that spikes in turbidity were seen at approximately the same time in the cycles of rising and falling water levels. If the turbidity spikes were due to boat wakes as FirstLight asserts, they would not be almost exactly correlated with the rise and fall of the river that is caused by the NMPS discharge. In order to see this almost lock-step correlation, there would have to have been a flotilla of boats that appeared at this site, at the same time in the cycle of rising and falling river levels, every day of the week over the July 24-August 9, 2019 period.

These almost daily spikes in turbidity signify a daily removal of sediment from the river banks to both the water column, as well as to the Littoral Zone. An increase in the “embeddedness” of cobbles, gravel and other coarse substrates will follow from almost constant non-point pollution of this sort. As fine-grained particulates are added to the Littoral Zone, the coarser substrates get covered over (embedded). This results in a loss of habitat for:

- invertebrates that utilize the interstices between the coarse substrates as habitat;
- for fish that prey on those invertebrates; and,
- for small fish and early-life stages of larger fish species that use the area to feed and avoid predation.

One can reasonably assume that this situation occurs not just at the USGS gage site near Northfield, but throughout the area of river affected by the fluctuations in river height caused by NMPS station's intake and discharge – well over 8 miles of river.

As embeddedness increases, the finer particles eventually totally cover the coarse substrates and benthic habitat for many important groups of macroinvertebrates (e.g., mayflies, caddisflies, stoneflies and neuropterans) disappears. It is true that the resulting habitat – mud, silt and sand, is habitat for other macroinvertebrates, especially worms, but embeddedness of substrates in the Littoral Zone results in a great loss in the diversity of aquatic organisms that is usually associated with this area of a river.

Another problem with turbidity is its effect on gills of macroinvertebrates and fish. Gills of both groups can become clogged in turbid waters, making it more difficult for efficient oxygen transfer to take place from water to the circulatory systems of these organisms.

Excessive, daily spikes in turbidity will also disrupt the phytoplankton and periphyton communities because of the reduction in the depth of light penetration in the water column and the covering of their surfaces which is another avenue of reduced access to sunlight. Both phytoplankton and periphyton communities provide food for an array of both macroinvertebrates and fish.

Physical Integrity: Riparian Zone

Changes in River Height negatively affect the structural integrity of the Riparian Zone:

Figures 2, 3 and 6 above depict almost daily changes in the height of the Connecticut River near Northfield. Some of these fluctuations are as great as 4 feet. As these fluctuations were achieved 5.7 miles upstream of the NMPS intake/discharge site, it is probably that river height changes are increasingly greater as one moves closer to the intake/discharge site. A loss of soil in the Riparian Zone results from this almost daily movement of water into and out of the Riparian Zone.

Bank failures are due to NMPS operations, not to boat wakes as First Light suggests.

The almost-daily spikes in turbidity depicted in **Figure 6** are evidence that there is a slow but steady erosion of the riverbanks that is highly correlated with the almost daily cycle of the change in river height caused by the NMPS intake and discharge. It stands to logic that a slow loss of the soil at the base of the river banks would lead to eventual bank failures: the reader is asked to remember that enormous changes in river height, caused by NMPS operations, have been going on for 52 years. Furthermore, as banks lose their vegetation the root masses that hold the soils in place are lost as well, and it is these root masses that protect the soils from erosion. When floods do come, the river will tear away large amounts of soil from the banks as it is no longer protected by the root masses of native plants. Take a look at the photo below. It's easy to see that the river in flood stage will remove large amounts of soil from this, now unprotected, bank. In the company's "study" of bank erosion, FirstLight mentions flooding as one of the major causes of bank erosion. Of course it is: with a completely "raw" state of the bank soils, erosion will be enormous when flood waters hit these banks. The root cause of the issue, however, is the 52-years of daily, erosive events initiated by the rise and fall of the river and the river flow reversals, both caused by NMPS operations.



Figure 7. Bank failure from the western side of the Connecticut, upstream of the NMPS station intake and discharge. Photo from: Pg. 87 of the Public Comments to Mass DEP on FirstLight 401 WQC, provided by the Landowners and Concerned Citizens for License Compliance (LCCLC) and the Connecticut River Streambank Erosion Committee.

The number of bank failures and their extent along the river bank are only expected to increase unless NMPS reduces or stops its destructive cycle of intake and discharge. (see: Written Public Comments of FRCOG 401 WQC Comments and Recommendations June 3, 2024 at: <https://www.mass.gov/info-details/401-wqc-for-the-firstlight-hydroelectric-re-licensing-project#public-involvement-in-401-wqc-process>). And, they are expected to worsen even further if NMPS is allowed an additional 25% intake and discharge volume.

Much of the information above was provided to FERC in my December 16, 2024, Comments. One would think that MassDEP read those comments. It does not make sense to me that, with knowledge of the situation discussed above, with daily pulses of sediment following the rise and fall of the river, induced by NMPS operations, that MassDEP could make the following statement in the Draft WQC regarding the additional 25% increase in NMPS operations (the “change” underlined below):

*“MassDEP has determined that this change, in combination with the TFI impoundment elevation restrictions discussed above, **will have no significant impact on** water quality, fish, plants, wildlife, endangered species, and **erosion**.”*

MassDEP seems not to have accepted, or admitted, the fact that this intake and discharge cause habitat degradations that violate MA SWQS.

Part 2

Massive Thermal Releases by NMPS Station Violate the federal CWA

The release of massive amounts of heat by NMPS was documented via satellite imagery and was discussed in detail in my Dec. 16, 2024, Comments to FERC. By referencing them here, I include them in these comments on MassDEP's Draft WQC. It is mentioned here as further support of the fact that the operations of NMPS station violate the federal Clean Water Act as heat is a pollutant and the release of heat into a waterbody violates the federal CWA unless the releases are properly permitting through the National Pollutant Discharge Elimination System (NPDES). The releases described in my Dec. 16 Comments were not permitted. There appear to have been many releases, some of which are documented in those comments.

I am including one photo (**Figure 8**, below) from the Landsat 8 satellite that depicts a heated section of the Connecticut River adjacent to the NMPS discharge site. It was taken at 11:32 Eastern U.S. DST on July 24, 2023. One can see that the NMPS Upper Reservoir is approximately the same shade of yellow as is the Connecticut River adjacent to the discharge site. This indicates that these two areas are approximately the same temperature (note the temperature scale on the bottom right of the photo). Both upstream and downstream of this warm (yellow) area, water temperatures in the Connecticut River are cooler. This is strong evidence that a release of heat from the facility was taking place at the time the photo was taken and was heating the Connecticut River.

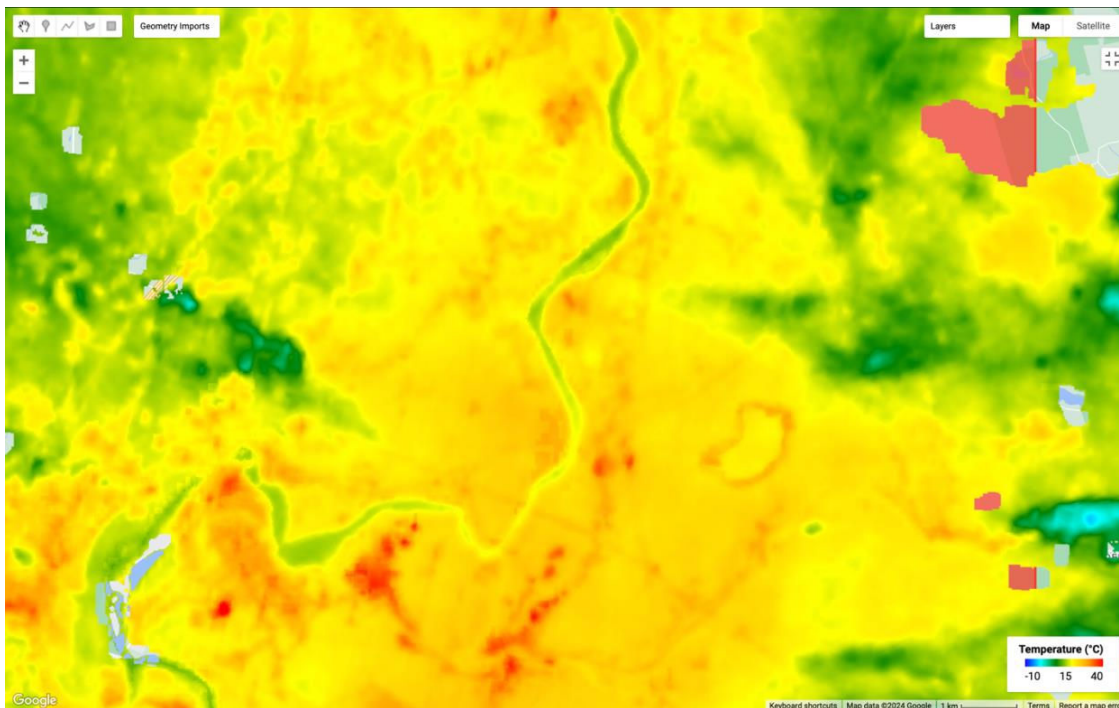


Figure 8: Landsat 8, infra-red image, Connecticut River and NMPS Upper Reservoir, 7/24/2023.

The warm area in the river that is adjacent to the NMPS discharge site extends for about 4 miles and is primarily found downstream of that site. This area is up to 5°C hotter than more upstream and downstream areas of the Connecticut River.

Heated discharges are illegal (heat is a pollutant), under both the federal and state regulations, unless permitted through NPDES. Although the NMPS station has an NPDES permit for its “non-contact cooling water” (a relatively small volume of water used to cool its 4 turbines), it does not have a permit for the discharge of heat from its approximately **4 Billion gallon** per day discharge from its Upper Reservoir. Accordingly, what appears to be a heated discharge from NMPS in the figure above would be illegal. There are many similar events that have been documented by Landsat satellites. Potential causes for heating of the Upper Reservoir are listed in my Dec. 16 comments to FERC.

The infra-red information presented here and, in my December 16, 2024, comments to FERC should be seen as a “red flag” to MassDEP and EPA, signaling that further investigations of heated discharges from NMPS should take place with potential need for an NPDES permit for the facility’s approx. 4 Billion gallon/day discharge.

Part 3 Violations of the MassDEP’s Surface Water Quality Standards (SWQS)

Designation as Class B:

The segment of the Connecticut River into which the NMPS facility discharges and from which it takes in water, is designated in the MA SWQS as **Class B (warmwater)**. The Class B designations for aquatic life include “**habitat** for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions...”

Class B waters must have “healthful” habitat.

In 2003, Region 1, USEPA responded to comments from Dominion, the owners of the Brayton Point electro-generating plant in Somerset, MA, regarding the NPDES permit limits for that facility’s intake and discharge. In those comments, EPA distilled the meaning of the MA SWQS with respect to *Class SB* (saltwater, Class B) waters and their habitat, by stating that it was consistent with the intent of the MA SWQS that **fish habitat** in Class SB Waters **must be “healthful”** (citation below).

MassDEP referenced EPA’s use of the term “healthful” for Class SB fish habitat in developing a WQC for the Mirant Kendall NPDES intake and discharge to a Class B inland water. **In that WQC, MassDEP stated that Class B fish habitat must also be “healthful.”**

In making that statement in the WQC for Mirant Kendall, MassDEP set a precedent for the use of that descriptor for future generations of those looking to clarify and simplify the intent of the SWQS regarding Class B habitat:

Footnote 8 from the: Water Quality Certification for NPDES Permit MA 004898 (Mirant Kendall Station, Cambridge, MA)” dated September 13, 2006:

“MassDEP acknowledges that the Class B standard for inland waters is distinct from the Class A standard with identifies the designated use as an “excellent” fish habitat. Nevertheless, consistent with the WQS interpretation by EPA and MassDEP of the Class SB standard for coastal waters in Dominion, MassDEP also believes that a Class B fish habitat must be healthful and of at least somewhat high water quality given the provisions of 3124 CMR 4.01(4) and 314 CMR 4.05(1). See EPA’s Response to Comments dated October 3, 2003, on the Draft NPDES permit No. MA-003654 for the Brayton Point Station, at V-11 and note 4 and Amicus Brief of the Massachusetts Department of Environmental

Protection in Support of EPA NPDES Permit No. MA-003654, dated December 22, 2003) at p. 11 and note 10."

Due to the department's use of the term "healthful" to describe the intent of the SWQS for Class B "fish habitat", in the Mirant Kendall WQC, the use of any less-protective approach for interpreting the Class B standard for NMPS could be considered "arbitrary and capricious."

At this point, the reader should be aware that the MA SWQS do not simply designate "fish habitat" as the full extent of aquatic life uses; they also designate the other uses described above (other aquatic life, and wildlife, etc.). Because the SWQS include all of these aquatic life uses in its designations for Class B waters, and do not single out *only* "fish" habitat, it is a logical extension of the Mirant Kendall WQC language regarding "healthful habitat" to assume that the intent of the SWQS, with regard to habitat, is that the term "healthful" should extend to these other uses as well; thus, all aquatic life in Class B waters should have "healthful habitat."

Based on EPA's and MassDEP's distillation of the intent of the Class B standard as "healthful habitat", the important question regarding NMPS operations in the Connecticut River is this:

is the habitat within the river seg segment affected by NMPS operations "healthful" for fish, other aquatic life, and wildlife including for their reproduction, migration, growth and other critical functions?

Integrity and Habitat of surface waters are inextricably linked:

With respect to aquatic life, these terms from the Federal CWA and the MA SWQS are synonymous: if some aspect of the physical integrity of a river segment is lost, that loss is reflected in the habitat quality for one or more components of that segment. Thus, the goals of the Federal CWA are directly linked with those of the MA SWQS.

We can see this from the habitat perspective: the primary goals of the Federal CWA, to "protect and enhance the physical, chemical and biological integrity of the Nations waters" will be accomplished through the MA SWQS *only* if "habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions" is also protected and enhanced.

This link between integrity and habitat, is spelled out in the first paragraph of the MA SWQS, at 314 CMR 4.01 (3), and its further refinement at 4.05(3)(b):

*CMR 4.01 (3) Purpose. M.G.L. c. 21, §§ 26 through 53 charges the Department with the duty and responsibility to protect the public health and enhance the quality and value of the water resources of the Commonwealth. It directs the Department to take all action necessary or appropriate to secure to the Commonwealth the benefits of the federal Clean Water Act, 33 U.S.C. § 1251 et seq. The objective of 33 U.S.C. § 1251 et seq. is the restoration and maintenance of "the chemical, physical and biological integrity of the Nation's waters" 33 U.S.C. § 1251(a). To achieve the foregoing requirements the Department has adopted the Massachusetts Surface Water Quality Standards which designate the most sensitive uses for which the various waters of the Commonwealth shall be enhanced, maintained and protected, which prescribe the minimum water quality criteria required to sustain the Designated Uses, as defined in 314 CMR 4.02: **Designated Uses**; and which contain regulations necessary to achieve the Designated Uses and maintain existing water quality including, where appropriate, the prohibition of discharges.*

For Class B waters:

"4.05(3)(b): These waters are designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation."

Available information indicates that Integrity and Habitat have been violated due to NMPS operations:

Actual studies of the effect of NMPS operations on Littoral Zone habitat (embeddedness, water clarity, the macroinvertebrate community, plant assemblages, shoreline fish assemblages, etc.), Riparian Zone Habitat, the Connectivity within this river segment, and other aspects of aquatic communities or their habitat, are either completely missing or inadequate.

However, the USGS gage information near Northfield and photos from those contributing to the Public Comments on the FERC re-licensing of NMPS are reliable tools in evaluating the destructive nature of NMPS operations.

So too is our common knowledge and common sense:

- it is common knowledge that fish strandings will result with de-watering events: everyone who has spent time in and around streams or rivers, even as a kid, knows that a drastic change in river height often leads to fish strandings;
- it is simply common sense to surmise that a loss in water clarity will result from an almost daily pulse of turbidity;
- it is common sense to presume that a loss of up to two feet of river height will result in the desiccation of river substrates in the Littoral Zone which would otherwise provide habitat for a variety of periphyton, native aquatic plants, macroinvertebrates and other aquatic organisms. **There is no need for a “study” to come to this conclusion. It is simply common sense.**

All of these, common-sense conclusions can be arrived at by simply looking at the online information from the USGS gage on the Connecticut River near Northfield, MA. It appears the MassDEP has either ignored this information or has not taken the time to review it.

NMPS operations have created an unhealthful habitat for:

- American Shad eggs, larvae and juveniles, and for small fish of other species due to the NMPS intake,
- all species of fish due to increasing the probability of strandings caused by river height changes,
- fish that use Littoral Zone habitat for feeding and escape from predation due to dewatering,
- macroinvertebrates in the Littoral Zone via flow reversals, de-watering of habitat and siltation,
- aquatic plants via flow reversals, de-watering of habitat, increased turbidity,
- Riparian Zones via almost daily removal of sediment, river height changes, flow reversals,
- unknown species due to what appear to be intermittent discharges of heat.

All the unhealthful conditions mentioned above are linked to the operations of NMPS: its intake and discharge of massive amounts of water from and to the Connecticut River.

NMPS operations, and any expansion of those operations violate the MA SWQS, section 4.03(3)(b):

*CMR 4.03 (3) (b) “When the Department issues a 401 Water Quality Certification of an activity subject to licensing by the Federal Energy Regulatory Commission, flows **shall be maintained or restored to protect existing and designated uses.**”*

As noted above, the designated uses are: **habitat** for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions. This equates to a “healthful habitat” requirement for all aspects of aquatic life.

MassDEP has an obligation to stop the SWQS violations and Federal CWA violations caused by NMPS operations. It has the ability to do so as outlined by the Supreme Court, referenced below in the 2006 WQC for the Mirant Kendall Station:

“It is well established that if there is a discharge to trigger application of the state water quality certification provisions under Section 401 under the CWA a state may place conditions on the permit applicant’s activity as a whole to ensure compliance with an applicable water quality standard or other requirement of state law. PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700 (1994). See Also Section 510 of the CWA and 40 C.F.R. ss 12.80 (d), 125.84€, 125.90(d) and 125.94€. Moreover, the Supreme Court determined that a project that does not comply with a water body’s designated use does not comply with the WQS and, therefore, a state’s water quality certification may condition the project to assure compliance with the designated uses. Id.”⁷

MassDEP’s Draft WQC is a great disappointment. The Department appears to completely ignore the violations outlined above and is allowing further degradation of the system by its acceptance of NMPS’s request for an additional 25% intake and discharge.

It is quite unbelievable that the Department sees nothing wrong here.

Part 4

Options outlined in the MA SWQS when Aquatic Life Uses are not met

The reader is directed to the MA SWQS, CMR (4) National Goal Uses, Partial Uses, and Variances. (See: <https://www.mass.gov/doc/314-cmr-400/download>)

The SWQS provide several options for the MassDEP to follow if a water body segment does not meet the qualifiers for habitat: either “excellent” habitat for Class A or, given the Mirant Kendal WQC precedent for protecting Class B waters, “healthful” habitat for Class B.

The First Option: Removing a National Goal Use That is not an existing use

There are two terms here that need some explanation to the reader: “**existing use**” and “**national goal use**.”

Existing Use (a):

There may be some confusion on the part of MassDEP regarding the term “existing use” and there are two aspects of this term’s definition that need explanation.

One of MassDEP’s representatives, during the Public Meeting on October 10, 2024, responded to a question by answering something akin to “but they (NMPS) have been operating since prior to November 28, 1975.”

Why was this date named? Undoubtedly, it is due to the definition of Existing Use in the MA SWQS:

“Existing Use: Those designated uses and any other uses that do not impair the designated uses that are actually attained in a waterbody on or after November 28, 1975; except that in no case shall assimilation or transport of pollutants be considered an existing use.”

At times the Connecticut River experiences periods when the NMPS is not operating. During these non-operational periods the detrimental aspects of the intake and discharge are not in effect and a new, *higher* “existing condition” persists for the duration of that “down time”. During these periods, for example, the facility’s intake which entrains eggs, larvae and juvenile American shad and small fish of other species into the NMPS turbines when it is operating, does not impose this “unhealthful” habitat in the water column. During these outages, the habitat, even directly outside of intake pipe is more “healthful” to all aquatic life.

Two conditions, though “unhealthful” for certain aquatic life, that would qualify as existing uses are these: a dam that was installed 50 years prior to 1975, and a natural wetland that lies between an upper segment of a Coldwater stream and a lower segment of the same cold-water stream.

In the case of the dam, the bottom sediment just upstream of the dam would typically consist of fine-grained sediments, which are “unhealthful” for many macroinvertebrate groups.

In the wetland case, dissolved oxygen downstream of the wetland may not meet SWQS and may be much lower than the stream segment upstream. This can occur due to a high “sediment oxygen demand” from wetland sediments which deplete the oxygen concentrations in the water column, creating an “unhealthful” habitat for many species of fish.

Both of the above would be considered “existing uses” that are actually unhealthful to certain organisms but would be allowed because no “higher” use had been seen in the segments in question since November 28, 1975.

The conditions that exist in the Connecticut River when the NMPS facility is operating, even though they began prior to November 28, 1975, cannot qualify as an “existing use” in the same way as the dam or wetland described above. Both of the latter have created conditions that are continuous through time. NMPS operations, on the other hand, are discontinuous. Because of the discontinuous nature of NMPS, a “higher use” (i.e., the “healthful habitat” outside of the NMPS intake structure) exists at times in the river. For example, when NMPS is not operating, no eggs, larvae or juvenile fish are being taken into the facility’s intake; no flow-reversals are taking place; no rise and fall of the river takes place. The condition of the river when NMPS operations stop, becomes the higher “existing use” that must be protected.

This higher “existing use” is not currently being protected by MassDEP, although it has the obligation to do so.

Existing Uses (b):

In addition to the above, the conditions in the river due to the NMPS intake and discharge qualify as **“any other uses.”** According to the definition for Existing Uses above, these “other” uses must not “impair the designated uses.” Thus, they are disqualified under the definition of “Existing Uses” because they “impair the designated use”, i.e., of “healthful habitat” according to the precedent expounded by MassDEP in the 2006 Mirant Kendall Station WQC.

National Goal Uses:

National goal uses are defined in the SWQS as: “Propagation of fish, shellfish other aquatic life and wildlife and recreation in and on the water in accordance with 33 U.S.C. § 1251 et seq.”

As the reader can see, in a similar fashion to the definition of Class B waters that currently exists in the SWQS, *there is no qualifier* in front of the word “propagation”, such as “excellent” or “good” or any other measure of

the degree of propagation that is required. This creates confusion on the part of those attempting to understand the intent of the SWQS and could result in endless debate. Is only 80% propagation compared to the unimpaired propagation OK? What about 50% or 10%? Do all of these qualify as “propagation”?

The framers of both EPA’s 2003 Response to Comments on Dominion, as referenced above, and the 2006 WQC for Mirant Kendall, did those intent on both understanding and enforcing the SWQS a great service *in setting the precedent* for the use of “healthful” as a qualifier for the habitat of Class SB and Class B waters.

Removal of National Goals Uses in this river segment: Due to NMPS operations a “Healthful habitat” for fish, macroinvertebrates and other aquatic life does not exist throughout the 20-mile segment of the Connecticut River between the Vernon and Turners Falls Dam. Accordingly, MassDEP needs to either determine how these aquatic life uses can be restored or remove these as aquatic life uses in this river segment.

The second option: Designating a segment as partial use

In a similar fashion to the above, MassDEP could declare that this segment of the Connecticut is only appropriate for a “partial use”, essentially “ceding” this segment of the river over to FirstLight for its uses as a Lower Reservoir and denying its use as “healthful habitat” for aquatic life.

The third option: Granting a variance to authorize a discharge

A variance is a temporal solution that is granted while fixing the problem(s) with the segment in question. A Use Attainability Study is required for a variance to be granted.

The conditions necessary for any of the three options listed above are outlined in the SWQS at 314 CMR 4.03(4)(b) and (c):

314 CMR 4.04:

(b) Prior to removal of a use or the designation of a partial use, the Department shall provide public notice and the opportunity for a public hearing in accordance with M.G.L.c. 30A and the applicant shall submit to the Department the information necessary for completion of a Use Attainability Analysis.

(c) The Department may grant a variance for a specified period of time for a particular discharger and for specific pollutants so that it can be determined through a Use Attainability Analysis whether uses can be attained. A variance applicant shall submit to the Department a detailed assessment of the types of information that will be needed for completion of the Use Attainability Analysis. A variance may be granted only for the pollutants causing noncompliance with criteria and all other provisions of 314 CMR 4.00 apply for the term of the variance. Prior to granting a variance, the Department will provide or require public notice and provide an opportunity for a public hearing in accordance with 314 CMR 2.00: Permit Procedures. An applicant granted a variance shall submit to the Department information necessary for completion of a Use Attainability Analysis in accordance with the provisions of the variance and the permit.

Part 5 Suggestions to Mitigate Impacts to Fish From the NMPS Intake and Discharge

Problem 1: Impacts from Flow Reversals and Changes in River Height caused by NMPS operations:

NMPS operations cause river conditions that are severely detrimental to aquatic life habitat and violate all three of the primary goals of the federal Clean Water Act: the restoration and maintenance of the **chemical, physical and biological integrity** of our nation's waters, as well as the intent of the Class B standards as "healthful habitat" for aquatic life.

A river whose flow is reversed (described and documented in Part 1 above) for over 8 miles on almost a daily cycle, cannot be said to have physical integrity as a river. There are no other rivers in Massachusetts, other than tidal rivers, where river flow is reversed to this degree. Problems and impacts associated with both flow reversals and drastic changes in river height, both caused by NMPS operations, have been described above.

Problem 2: Connectivity Impacts (entrainment): NMPS station has an intake and discharge that is enormous: the largest in the state and many times larger than any fossil-fuel electro-generating facility in the history of Massachusetts. It is also operating in an area where eDNA of Shortnose Sturgeon has been found, and two adult Shortnose Sturgeon have also been found. Moreover, adult American Shad migrate into this area, eggs and larvae inhabit the area, and juvenile shad use it as a nursery and must migrate downstream and move past the NMPS station's intake. Other fish species use this area as well as habitat for various aspects of their lives.

As shown above, the NMPS intake for much of the year, has a flow rate that exceeds, or sometimes greatly exceeds the downstream flow of the Connecticut river. It is unknown what percentage of fish in this segment's nursery area and what percentage of out-migrating fish can successfully navigate to the other side of the intake and downstream. It is also unknown whether out-migrating fish are "attracted" to the higher-velocity flow of the intake compared to the other downstream flow of the rest of the river.

Suggested Solutions:

1. Outline conditions in the permit that do not allow flow reversals in the Connecticut River.

The facility has been operating to the enormous detriment to the Connecticut River for 52 years, and in violation of the Federal Clean Water act for the same duration. It is past time that NMPS be put on a **short timeline** to remove the flow-reversal component of its intake and discharge. The facility is currently operating on what is termed an "Open-Loop" in which there is an upper reservoir that acts as storage, and water is drawn from the Connecticut River to fill that reservoir. A Closed Loop system, which many other Pumped-Storage facilities use elsewhere in the U.S, is one in which there is no, or very little, withdrawal from any natural waterbody. The second reservoir for a Closed-Loop system is located downhill from the Upper Reservoir with turbines between the two. If there were a need for "make-up" water due to evaporation, this could either be taken from a well, or perhaps, with safety-measures in place, from the Connecticut River.

MassDEP has already taken similar steps for two other electro-generating facilities: Brayton Point and Mirant Kendall. Both facilities were given NPDES permits that were so restrictive that, in the case of Brayton Point, the facility built two, 500-ft.-tall cooling towers and transformed its operations to closed-cycle cooling. Mirant Kendall was also given a restrictive permit that would not have allowed the facility to operate as it had, and the facility completely altered its internal operations. It also reduced its cooling-water intake and discharge to and from the Charles River to about 4% of what it was taking were prior to being issued a restrictive permit. In the case of Brayton, both MassDEP and EPA were reluctant to take corrective actions on the NPDES permit but changed their minds after the threat of a lawsuit from the state of Rhode Island.

The state has the authority to condition the WQC as mentioned above. As outlined in the *Mirant Kendall, 2006 WQC*, the Supreme Court in *PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700 (1994)* ruled that “if there is a discharge to trigger application of the state water quality certification provisions under Section 401 under the CWA a state may place conditions on the permit applicant’s activity as a whole to ensure compliance with an applicable water quality standard or other requirement of state law.”

Thus, as required in the SWQS, to ensure that healthful habitat for American shad, macroinvertebrates, and other organism exists in the current area of influence of the NMPS intake and discharge, MassDEP *is obligated* to condition the WQC as outlined above.

2. Require the use of Rotating Screens as an interim measure to protect against entrainment: In the meantime, while FirstLight is doing what it needs to remove the flow-reversal component of its intake and discharge, require the installation of rotating screens, with an approach velocity of 0.5 ft./sec. to mitigate potential impacts to Shortnose Sturgeon, American Shad and other fish in the “river”.

Background for Suggested Solution 2:

For much of my 36-year career as an Aquatic Ecologist for MassDEP, I worked on Technical Advisory Committees for all the large fossil-fuel electro-generating stations in Massachusetts. These included Brayton Point, at the time the largest fossil-fuel electro-generating station in New England, which at the time had a One-Billion gallon/day intake and discharge. I also chaired the “Administrative-Technical Committee” for the Pilgrim Nuclear Power Plant for around 15 years. Pilgrim had about a 475 million gallon/day intake and discharge. I also worked Technical Advisory Committees for the Canal Electric Plant, Salem Station, the Mount Tom station, the Somerset electro-generating station and Mirant Kendall. For a short time, I also assisted on the Vermont Yankee Nuclear facility’s technical evaluation committee.

Many of these committees were populated by biologists and engineers from MassDEP, EPA Region 1, MA Coastal Zone Management, National Marine Fisheries Service, as well as by professors from UMass Amherst or Southeastern Massachusetts University, scientific consultants and engineers with guest appearances from certain specialists. The committees designed and/or evaluated the environmental impact studies for each of the stations which were designed to assess both the effects of the thermal releases as well as the impacts of each station’s intakes on aquatic life. The committees also made recommendations to the National Pollution Discharge Elimination System permitting groups at EPA and MassDEP with regard to station operations and how they might be improved to mitigate impacts to aquatic life.

All these electro-generating facilities had specialized equipment to protect against entrainment of fish into the facility’s intake. This equipment is loosely termed “rotating screens”. These are continuous metal screens that rotate on top and bottom cylinders that are mounted in front of the intake at each facility. A common screen type was the Ristroph rotating screen. The best among these screening systems had two different “screen washes”: one that gently removed moved impinged fish and other organisms off the screens in the above-water section of the screens, and into a sluiceway that transported impinged organisms to a “more safe” location. The objective of this relocation of impinged fish was to move them far away enough from the intake screens that they were less likely to become re-impinged. The second screen wash was a high-velocity spray that knocked off any remaining debris that was on the screens which also was sent into the sluiceways so as not to foul the screens a second time.

The screens were designed to have no more than a 0.5 ft./sec. “approach velocity”, the water velocity at about 1-ft. in front of the screen. This flow-velocity had been carefully developed by the industry and fishery biologists to ensure that small fish, which are not typically strong swimmers, would be at least moderately-safe

from being pulled onto the screen and becoming impinged. Some of the systems had a “cross-flow” design which supposedly helped push fish alongside the screens, rather than directly on the to the screens.

A proposal has been floated that the NMPS station should install a 3/4-inch mesh “net” in front of the facility to reduce entrainment of fish with about a 2 ft./second velocity in front of the screen. Based on my experience in the technical-advisory committees mentioned above, the 2 ft./sec. velocity would have been considered much too high by the fishery biologists on the committees. I am currently unsure about the mesh size that was considered appropriate across the board, but some had a 3/8” mesh.

With reference to a net: the Pilgrim Nuclear facility had a net in its cooling water (a misnomer of sorts because this water was heated) discharge canal to protect against striped bass and other fish getting into the discharge canal. These fish were attracted to the velocity of the discharge water. Many fish did not appear to be put off by the heat in the water, but if trapped in the discharge canal on the wrong side of the net, some would be overcome by the heat and die. One very large gas-bubble disease had also occurred at Pilgrim Nuclear, which was the original incentive for installing this net. In this event a large number of fish succumbed to gas-bubble disease, the effects of which are similar to the bends. Unfortunately, fish often found a way of getting onto the wrong side of the net due to their attraction to the flow of the discharge. In addition, nets would sometimes tear or lose their points of attachment.

As mentioned above, I am concerned that we do not know the degree to which certain fish may be to the increased flow rate of the intake compared to the lower flow rate of the Connecticut River when the facility is in its intake mode.

As a result of the issues outlined above, I suggest that a better alternative than the net is the use of rotating screens in the interim between the FERC reissuance and when the first suggestion above is implemented. Because the discharge would have to move past the area where the screens will be, the screens would have to be designed in such a way that they would be moved out of the way when the facility’s discharge cycle began. Another potential method: areas on either side of the screens (“discharge lanes”) could be opened for the discharge, but discharge “doors” would close down the discharge lanes when the facility is in the discharge mode.

Thank you for the opportunity to comment.
I would be pleased to discuss any portion of this document in more detail.

Sincerely,

Gerald M. Szal
Aquatic Ecologist
Member of the Western Massachusetts Rights of Nature

Footnotes:

¹ **4 Billion** gallons per day discharge: I calculated this figure using information submitted by FirstLight in their FERC application (see: <https://www.mass.gov/info-details/401-wqc-for-the-firstlight-hydroelectric-re-licensing-project> -their application is a pdf on that site). According to this application to FERC: “*Per the current FERC license, the Upper Reservoir may operate between 1000.5 feet and 938 feet, equating to a usable storage capacity of approximately 12,318 acre-feet.*” If one converts acre-feet to gallons, one obtains a little over 4 million gallons. The *rate* of release is actually greater than 4 Billion gallons per day, releases occur during “peak power demand” periods, perhaps 8- 10 hours in a 24-hr. period. The facility has a capacity of releasing 20,000 cfs. If they release at this rate, they will run out of their allotted storage in 7.45 hours.

² USGS gage 01161280, on the Connecticut River Near Northfield, MA, near the Rt. 10 Bridge:
[https://waterdata.usgs.gov/monitoring-
location/01161280/#parameterCode=00065&period=P7D&showMedian=false](https://waterdata.usgs.gov/monitoring-location/01161280/#parameterCode=00065&period=P7D&showMedian=false)

From: [john h thompson](mailto:john.h.thompson@dep.state.ma.us)
dep.hydro@mass.gov; timothy.jones@mass.gov;
To: David.Hilgerman@mass.gov; jesse.leddick@mass.gov;
caleb.slater@mass.com; Paul.L.Jahnige@mass.gov;
Subject: FIRSTLIGHT 401 WQC
Sent: 2/22/2025 1:57:34 PM


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Relative to FERC designation P-2485: Northfield Mountain Pumped Storage Station:

Here's my comment spoken at the MA DEP hearing, held at Greenfield Community College, Greenfield, MA on 2/19/2025:

I don't see how you can say the water quality is "good" or "acceptable", when lots of river life like fish, fish eggs and larva, and May flies are ground up ROUTINELY in the turbines at Northfield Mountain.

You are defining "water quality" too narrowly if you leave out river life.

Thank you.
John H. Thompson


From: [Melissa](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/21/2025 8:46:05 AM

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To Whom It May Concern,

I am someone who has lived in the Connecticut River Valley my whole childhood and most of my adult life. The Connecticut River has been a part of my life, defining so much of my environment for that time. And so, when something comes up that may harm the health of the Connecticut River and the many beings who rely on the river, I definitely want to raise my voice in support of the river itself.

I believe that if the renewal of First Light's license at dams on the Connecticut River is approved as is, it is irresponsible and detrimental to the river and the beings who depend on the river, including the humans who reside in the Connecticut River Valley. The license, if passed as is, will result in increased erosion and disruption to the animal and plant life within the river.

First Light, owned by a Canadian investment group, benefits from the Connecticut River, a public resource, and therefore should be held accountable for certain measures to make sure that public resource remains healthy, is accessible for all, and definitely needs to make improvements in monitoring in these areas. For example, land management plans, to make sure erosion, invasive plant problems, fish passage problems, are mitigated by the company.need to be in place and enforced.

I ask that these issues are addressed in the new license and that the license be approved for the shorter amount of time, as things change quickly in this time of climate change, and problems should be addressed quickly.

Thank you for your attention to these matters.

A concerned citizen,
Melissa Vanek

██████████
Savoy, MA 01256

For MassDEP Filing:

2/19/2025

Commissioner Bonnie Heiple
 MA Department of Environmental Protection
 100 Cambridge Street, Suite 900
 Boston, MA 02114

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
 FirstLight 401 WQC Comments

Dear Commissioner Heiple:

I am a resident of Franklin County and a former member of the boards of directors of the Franklin County Chamber of Commerce and the Franklin County Farm Bureau. I offer this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has delivered significant benefits to Massachusetts communities through investments in accessible, year-long recreation offerings, local vendor contracts which have totaled nearly \$35 million since 2020, and as an employer of over 140 people in New England, including many important union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find.

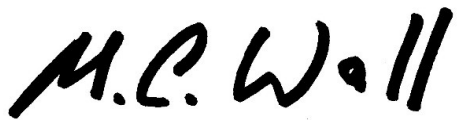
The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates¹. FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in Burlington, MA, FirstLight employs over 140 people in New England, is a proud Union employer, and supports many more Massachusetts businesses through its operations year after year.

¹ <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>

On top of that, FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

I applaud MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

A handwritten signature in black ink that reads "M.C. Wall". The letters are bold and slightly slanted, with a fluid, cursive-like style.

Carter Wall

A solid black horizontal bar used to redact a line of text, likely a phone number or email address.

Leverett MA 01054

For FERC Filing:

2/19/2024

The Honorable Debbie-Anne Reese
 Acting Secretary
 Federal Energy Regulatory Commission
 888 First Street N.E.
 Washington, DC 20426

Re: Northfield Mountain Pumped Storage Project No. 2485-071 Turners Falls Project No. 1889-085
 FirstLight 401 WQC Comments

Dear Acting Secretary Reese:

I am a resident of Franklin County and a former member of the boards of directors of the Franklin County Chamber of Commerce and the Franklin County Farm Bureau. I offer this letter in support of the Draft 401 Water Quality Certification (401 WQC) for FirstLight's Turners Falls Hydroelectric (Turners Falls and Cabot) and Northfield Mountain Pumped Storage Projects.

The Draft 401 WQC put forth by the Massachusetts Department of Environmental Protection (MassDEP) represents a balanced decision that ensures the Projects will satisfy Massachusetts Surface Water Quality Standards, while enabling the continued legacy of the Projects in delivering clean energy and energy storage to future generations, and substantial associated economic benefits. For years, FirstLight has delivered significant benefits to Massachusetts communities through investments in accessible, year-long recreation offerings, local vendor contracts which have totaled nearly \$35 million since 2020, and as an employer of over 140 people in New England, including many important union jobs in areas of Western Massachusetts where family-sustaining jobs can be difficult to find.

The Massachusetts Clean Energy Center projects the state will need over 30% more clean energy workers by 2030 in order to support the state's climate mandates². FirstLight provides those job opportunities today, and is active in workforce development efforts, building the workforce of the future. Headquartered in Burlington, MA, FirstLight employs over 140 people in New England, is a

² <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>

proud Union employer, and supports many more Massachusetts businesses through its operations year after year.

On top of that, FirstLight's Northfield Mountain and Turners Falls Projects play a critical role in delivering clean, local, low-cost power to communities across New England while providing needed grid reliability to the region. As renewables make up a growing portion of our energy supply, Northfield Mountain will play an even greater role in balancing the grid, while offsetting the dirtiest emissions generated by fossil-fuel powered generators. Northfield's operations also support the need to keep costs low for consumers – by generating during the hours of highest demand, Northfield can shave peak prices and realize significant price reductions for ratepayers who are too often burdened by energy costs.

I applaud MassDEP for a thoughtful, comprehensive Draft 401 WQC decision that supports a healthy Connecticut River, while enabling the Projects ability to support the region's clean energy future, and also the resilience of local economies, communities, businesses, and families now and in the future.

Sincerely,

Carter Wall

[REDACTED]

Leverett MA 01054

From: [Hal Weeks](#)
To: dep.hydro@mass.gov
Cc: [Hal Weeks](#)
Subject: FirstLight 401 WQC
Sent: 2/17/2025 11:00:06 AM

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Elizabeth Stefanik
Attn: FirstLight 401WQC, MassDEP-BWR
100 Cambridge Street, Suite 900
Boston, MA 02114.

Dear Ms. Stefanik:

Thank you for the opportunity to offer comments on the FirstLight 401 Water Quality Certification.

Having read through the document I suggest that the document fails to adequately preserve and/or restore Connecticut River flow conditions to the benefit of fish and wildlife values, and recreational interests, and the public generally.

Specifically, I disagree with the low levels of flow proposed to be authorized for the bypass reach immediately downstream of the Turner's Falls Dam. While this is expected to most directly impact endangered shortnose sturgeon (*Acipenser brevirostrum*), the low flows proposed to be authorized would detrimentally impact the full suite of river-dependent species in that area.

Secondly, I am dismayed that MA DEP is proposing to authorize a multi-year delay in the installation and operation of a barrier net at the Northfield pumped storage location.

Thank you for the opportunity to offer comments.

Sincerely,

Hal Weeks
Easthampton, MA
[REDACTED]

From: [Shirley White](#)
To: dep.hydro@mass.gov
Subject: Firstlight 401 WQC
Sent: 2/24/2025 3:40:20 PM

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Dear Ms Stefanik and members of MASS DEP commission,

I am writing to submit comments in response to the Mass DEP 401 draft that has been proposed for Firstlight's permit renewal application.

My name is Shirley White. I reside in Greenfield MA and own property in Turners Falls located [REDACTED], two blocks from the Connecticut river. The stability and health of the river is very important to me both as a property/business owner and a naturalist. The Connecticut plays a vital role in the Pioneer Valley ecosystem, and tourism of the area. The river is not currently meeting requirements to be considered class B, and is, therefore impaired, potentially affecting Eco tourism and recreational uses that are so vital to our economy. After reading the draft, I find that the requirements put forward still fall short of upholding the state's water quality standards and will not take action to help remediate the impaired status of the river. Below are my specific concerns:

The Northfield pump station:

Firstlight should not be using the river as a lower reservoir.

It's my understanding that if the Northfield project came before the state today, it would not be approved as it is set up currently, using the river as its lower reservoir. I would like to see DEP refuse to grant Firstlight permission to continue to use the river in this fashion. The effects of water height fluctuation, fish churn, and heat differentials are damaging the river and its banks. This situation has gone unchecked since the pump station was constructed. Their open loop system does not deserve to be grandfathered. Now is our opportunity to make a huge difference for the river and require Firstlight to build a lower reservoir so that there can be a closed loop system. The wide range of allowable water height in the Mass DEP 401 draft is greater than the current fluctuation and will do nothing to arrest the erosion currently occurring along the banks in the 20 mile stretch above the Turners dam. Please, exercise the power you have and the mandate the protection of the river. Considering the recent inclusion of pump stations in the green energy category for the state, Firstlight should be made to come into compliance with current regulations.

Flow Rate below the Turners dam:

The water level below the Turner's dam should be returned to a level that creates favorable migration conditions for the aquatic life of the river. The 401 draft gives precedence instead to the two endangered plant species, Tufted Hairgrass and Tradescant's Aster over true aquatic species. This is backwards to me as these plants, though endangered, have invaded the riverbed, where normally there should be water covering the bed year round. I would like to see the 401 draft include plans to relocate the plant species along the edges of the river to their true habitat, a seasonal fluctuation of wet and dry conditions. True aquatic life should take precedence. I would like to see a minimum flow rate of 1,400 cfs restored from July to November. The new evidence of the shortnose sturgeon elevates the importance of taking care of our migratory aquatic populations.

Specifics of permit:

I object to the reference on page 109, paragraph three listing boat waves as contributing significantly to erosion in Barton Cove. Firstlight's consultants came up with this fictitious "fact" and I don't see that it needs to be cited in a science based document.

50 years on this permit is much too long. This permit's duration should be much shorter in length, 20 years max, if Firstlight is granted a permit at all. It's a ridiculous amount of time to allow an operation such as this to go monitored as lightly as the oversight process outlined in the 401 draft sets forth. Science and technology will change. Power sources will change. Impacts on aquatic health need to be monitored and actively encouraged.

And finally there should be a decommissioning fund required to be estimated and set up so that our community is protected in the event that this method of energy production is abandoned.

Conclusion :

I would like to see Firstlight's application denied or approved conditionally by requiring the building of a lower reservoir.

Thank you for your service to the state. As a former member and chair of the Wendell Planning Board, I understand the pressure put on you by commercial interests and the lengths those interests will go to to hire consultants that will say whatever is convenient for the company. We know that you know better. Please stand by the water quality act and consider the deep impact that Firstlight has had so far and will continue to have far into the future for the Connecticut river.

Best regards,

Shirley White

██████████

Greenfield, MA 01301

From: [Seth Wilpan](#)
To: dep.hydro@mass.gov
Subject: FirstLight 401 WQC
Sent: 2/10/2025 1:20:14 PM

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As a resident of Northampton, MA living close to the Connecticut River, I urge you to consider the following concerns and recommendations when considering the relicensing of FirstLight Power's (FirstLight) Turners Falls Hydroelectric Project (FERC No. 1889) and Northfield Mountain Pumped Storage Project (FERC No. 2485).

- Heed the requests of the Indigenous stakeholders which could include but not be limited to protection of historic and cultural areas of significance for Indigenous nations.
- Mitigate the financial Impact on Communities of the reduced tax revenue that will result from the diminished assessed value of the Turners Falls project.
- Limit the new license term be a maximum of 30 years to be in a better position to respond to changing conditions, especially in view of the impacts of climate change. s.
- Mandate a minimum flow below the Turners Falls Dam of 1,400 cfs from July 1 to November 15 to enable boating and recreation, and to protect the habitats of macroinvertebrates and fish.
- The new license should set conditions that reduce soil loss, improve riparian habitat on the banks of the river, and protect archaeological resources. The license should continue to require FirstLight to monitor and mitigate bank erosion. Monitoring erosion for the entire term of the license is not only essential to the wellbeing of the river and its users during the term of the license, but will also provide essential data on the impact of FirstLight's operations on erosion.
- FirstLight should implement a streambank monitoring plan which includes yearly monitoring and measuring of erosion impacts on water quality, recreation, and land subsidence, as well as a Full River Reconnaissance study performed every three years, both for the duration of the license.
- The license should mandate that the fish net and the fishlift should fully installed and operational by year two and year five of the new license, respectively.
- I urge FERC to ensure that the state and federal agencies retain all freedom necessary to require any measure to ensure the protection of species and river health, if it is found that FirstLight's operations harm the ecosystem.
- FERC considers the relicensing of FirstLight at a time when we can be almost certain that energy generation, storage, and infrastructure will drastically change for decades to come. FERC should explore the requirement of a decommissioning fund which would ensure that the public is not solely responsible for the hydropower facility should it become uneconomical for the company or obsolete. FERC has already recognized its authority to require decommissioning funds.
- Mindful of the increasing risk of climate change-related disasters, FERC should review the relationship between Turners Falls and Northfield Mountain projects, and the Wilder Dam (P-1892-030), Bellows Falls Dam (P-1855-050), and Vernon Dam (P-1904-078) projects along the Connecticut River in Vermont and New Hampshire, all of which are being relicensed concurrently. FERC should focus on possible unified efforts

between facilities to mitigate downstream flood damage.

Thank you for your consideration of these recommendations.

Seth Wilpan

Northampton, MA

Truth is the story that emerges from the loving community in pursuit of virtue.

From: [Susan Worgaftik](#)
To: dep.hydro@mass.gov
Subject: First Light 401 WQC
Sent: 2/19/2025 7:23:50 PM

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Dear Elizabeth Stefanik:

Thank you for this opportunity to provide comments in response to the Mass DEP 401 draft that was posted in January.

My name is Susan Worgaftik. As a resident of Greenfield who often finds herself walking her dog in the parklands along the Connecticut River, I have the opportunity to observe the river. I am concerned about the river's future as I learn more about the 50 year certificate that First Light is requesting to continue its use of the river for the generation of electricity.

I have reviewed the draft plan that you released for the 401 WQC and am questioning whether First Light's operations meet state water quality standards. From my reading of the draft plan, First Light should be denied a certificate unless they can conclusively demonstrate that water quality will improve over their stewardship of the river and not get worse. The operational guidelines for the Northfield Mountain Pumped Storage Facility do not ensure that the erosion which has been an ongoing concern regarding the facility will improve. There are huge river height fluctuations that occur in the river on a regular basis due to the Northfield Mountain Pumped Storage Facility. The changes in the river result in erosion of the river banks which causes disruption of the vegetation there. This impacts aquatic life as well. As the fluctuations in the river can include a range of up to 9 feet for emergencies, such changes are not merely an occasionally disruptive situation. They have the potential for great harm. And the fact that these fluctuations can cause the river to run backwards only further compounds the problem.

As is obvious by now, I am not a scientist, nor do I have great knowledge of the river as a boater or person who fishes there. What I do know is that the electrical benefits that the Northfield Pumped Storage Facility is supposed to provide the region do not equal the damage that is caused by the changes to the river that are caused by this facility.

I urge you to make the changes necessary to your draft 401 that will ensure that the quality and safety of the river are the primary concerns of the DEP and the questionable economic benefits provided by the Northfield Pumped Storage Facility are analyzed in the light of the damages that it does and not just the very occasional additions it makes to the electric grid.

Sincerely,
Susan Worgaftik
Greenfield, MA