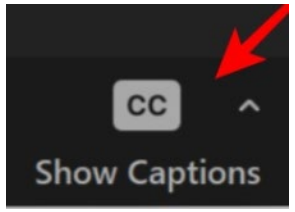
Massachusetts Department of Environmental Protection

Public Information Session on the 401 Water Quality Certification for the FirstLight Hydroelectric Re-Licensing Project

Welcome!

- This is a hybrid Public Information Session that is being hosted at The Shea Theater in Turners Falls, MA and on Zoom.
- **This session will be recorded and posted on MassDEP's website**.
- Zoom attendees are on mute and the chat-box has been disabled to minimize background noise and disturbance. Please use the Q&A function on your screen if you are having complications.
- The protocols for this information session will be announced when we begin.
- Closed captioning is enabled. Click on the *Show Captions* button, which may be hidden under the *More* button.
- Thank you for your patience.



Panelists and Facilitator

Tim Jones, Acting Director of Division of Wetlands and Waterways, MassDEP

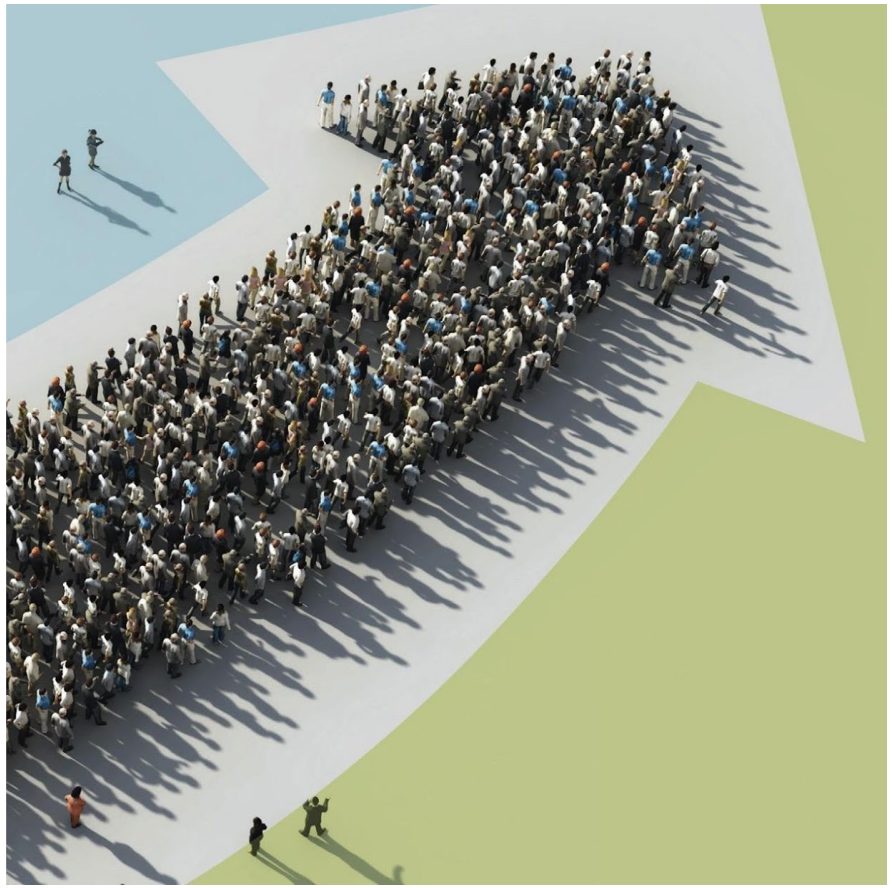
David Hilgeman, Senior Environmental Engineer, MassDEP Wetlands Program

Jesse Leddick, Assistant Director of Natural Heritage & Endangered Species Program, Mass Division of Fisheries and Wildlife

Caleb Slater, Chief of Hatcheries, Mass Division of Fisheries and Wildlife

Paul Jahnige, Director of Office of Outdoor Recreation (formerly DCR)

Stacie Smith, Managing Director at the Consensus Building Institute



MassDEP Public Information Session

Water Quality Certification (WQC) for FirstLight

October 10, 2024

Presentation by:
Stacie Smith

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Public Information Session Goals

- Learn about the water quality certification (WQC) process and Massachusetts Department of Environmental Protection (MassDEP)'s role
- Hear from MassDEP, the Massachusetts Division of Fish & Wildlife (DFW) and the Massachusetts Department of Conservation and Recreation (DCR) on their roles and recommendations regarding erosion, fish and flows, and recreation
- Ask questions and have them answered live

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Public Information Session Agenda

6:15 PM	**Welcome**
6:45	**MassDEP Water Quality Certification Introduction** Presentation (MassDEP), Q&A
7:05	**Erosion & Impairments** Presentation (MassDEP), Q&A
7:50	**Break**
8:00	**Flows & Fish** Presentation (DFW), Presentation (MassDEP), Q&A
8:45	**Recreation & Water Quality** Presentation (MassDEP), Presentation (MOOR), Q&A
9:15	**Next Steps**
9:25	**Open Q&A**
10:00	**Adjourn**

Multiple Opportunities for Questions & Answers

- After each presentation for targeted questions
  - Orally (in person) or in Q&A (on zoom)
- At the end of the meeting for broader questions and written questions
  - Orally (in person) or in writing (zoom and in person)

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Multiple Opportunities for Questions & Answers

Q&A Approach Following Presentations

To ask a question *directly related* to the topic of the presentation:

1) **For those in-person, raise your hand** during Q&A session and microphone runners will come to you.
2) **For those online**, add your question to the **Q&A app on Zoom**.

Note:

- Our goal is to answer as many questions as possible during the allotted time; please be concise in your asking and answering.
- Please keep your question focused on the presentation at hand.

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Multiple Opportunities for Questions & Answers

Open Q&A

To ask a broader question, additional question, or written question:

- In-person,
  - **Raise your hand** and microphone runners will come to you, OR
  - **Write your question on the notecard on your chair.** Staff will gather notecards and they will be randomly drawn and answered aloud.
- For those online, add your question to the **Q&A app on Zoom**.

Note:

- We will only read and/or address cards that are questions, on topic, and respectful.
- This is an opportunity to ask questions. For instructions on how to submit official written public comments, please see MassDEP's FirstLight webpage.

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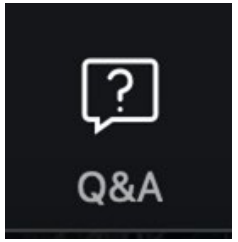
Q&A Zoom Logistics

- To ask a question select the Q&A icon on the bottom of your screen



- Type in your question and select “send”

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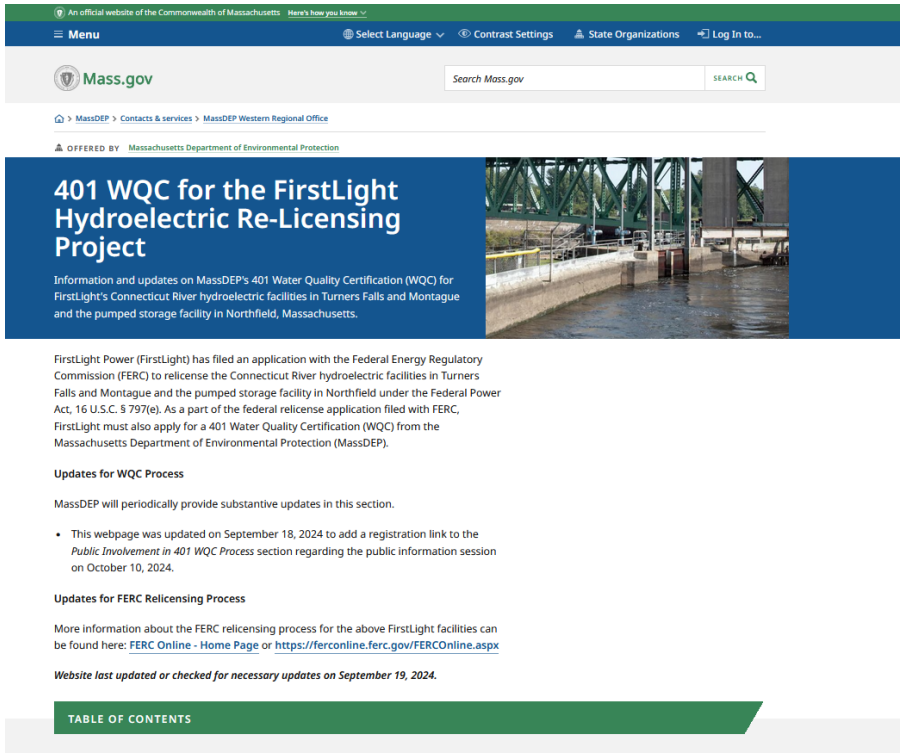
For More Information

All Slides and a recording of meeting will be posted on the Project website:

https://www.mass.gov/info-details/401-wqc-for-the-firstlight-hydroelectric-re-licensing-project

(or google “MADEP First Light”)



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Ground Rules for a Constructive Meeting

- Listen with an open mind
- Seek first to understand
- Treat each other with respect
- Avoid personal attacks
- Help us stay on topic and on time
- Ask clear questions at the right times

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FirstLight Water Quality Certification Public Information Session Overview

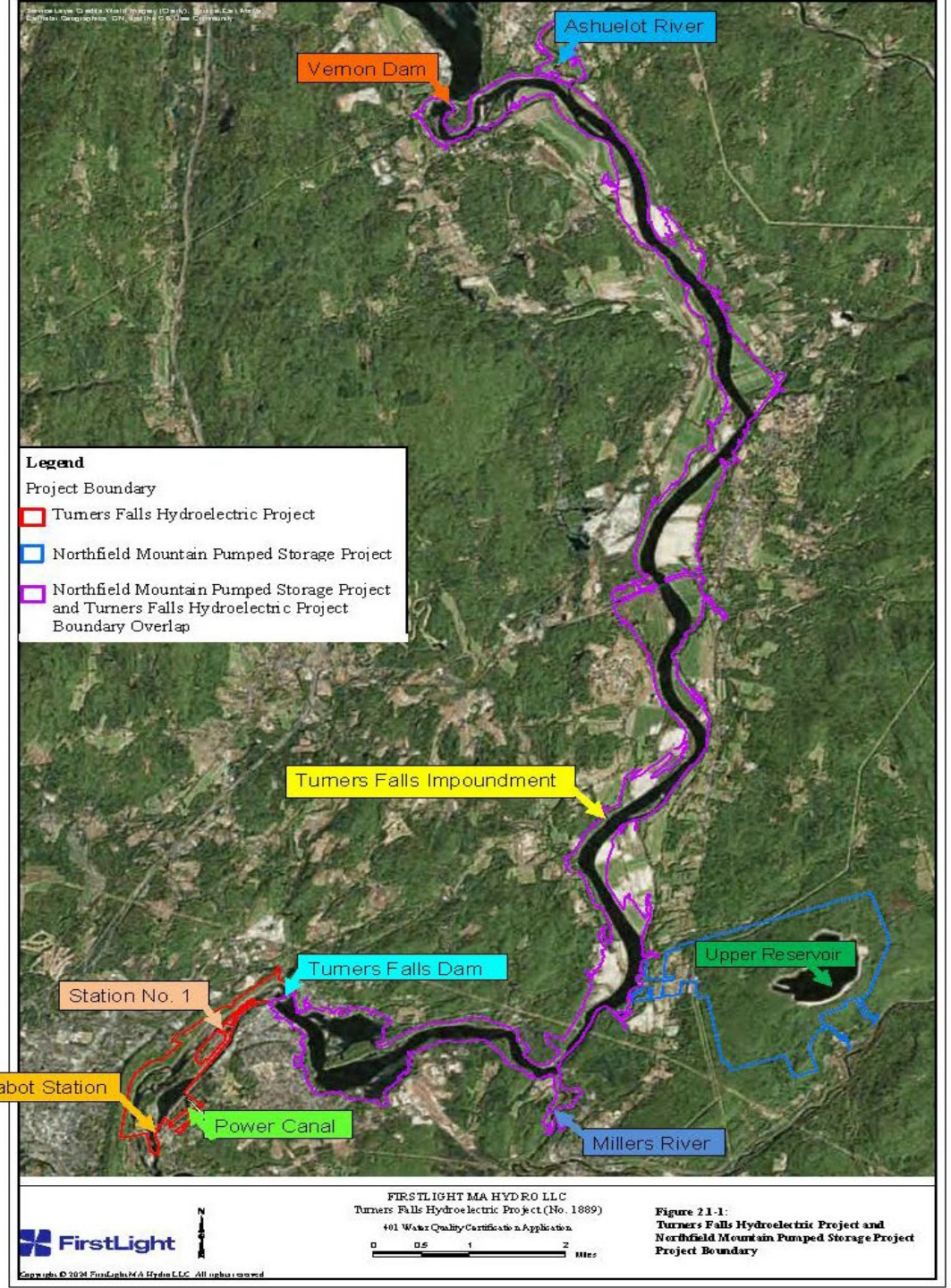
The Massachusetts Department of Environmental Protection (MassDEP)

October 10, 2024

Goals for This Information Session

- Provide you with a good understanding of MassDEP's obligations in this Certification process
- Help you understand the Certification process itself
- Provide you with a broad perspective of some issues at stake for the aquatic health of the Connecticut River

FirstLight Facility Overview



Introduction to Certification Process and This Information Session

- FirstLight filed an application with the Federal Energy Regulatory Commission (FERC) to relicense its hydroelectric facilities in Turners Falls, Montague, and Northfield

- As a part of the FERC process, FirstLight must also apply for a 401 Water Quality Certification (Certification) from the Massachusetts Department of Environmental Protection (MassDEP).

- Tonight, we will provide a broad overview of our ongoing Certification process

MassDEP's Expanded Public Process

- The Certification Application was received April 22, 2024
- Held 35-day public comment period, expiring June 3, 2024
- Two virtual public hearings on May 29, 2024
- Public information session (tonight)
- Intended public comment and public hearing on a draft Certification
- Decision and deadline for Certification is April 22, 2025

Legal Standard for MassDEP's Certification Review

- Will the proposed relicensed operation comply the Massachusetts Surface Water Quality Standards (314 CMR 4.00) and other water quality related state laws?
  - Will the operations provide the water quality and quantity that support existing and designated uses and address impairments?
  - Designated uses include fish habitat, other aquatic life, wildlife, water-related recreation, fishing, boating, irrigation, compatible industrial cooling, process use, and consistently good aesthetic value
  - Existing uses are the designated uses and other uses that have been attained in a waterbody on or after November 28, 1975 (e.g. Tufted Hairgrass, endangered; Tradescant's Aster, threatened)
- MassDEP must grant, deny, or waive issuing the Certification
- MassDEP may establish conditions necessary to issue the Certification, which FERC must incorporate into its renewed federal license (if related to water quality)

Examples of Conditions That May be Necessary to Issue Certification

- Requirements to:
  - Repair erosion caused by facility operations and monitor to prevent future erosion caused by facility
  - Install barrier net in front of Northfield intake structure to prevent fish intake
  - Install fish ladders or lifts to facilitate fish passage over dam
  - Increase water flow in the river to sustain aquatic life

How Could a River With a Hydropower Facility Possibly Meet Water Quality Standards?

- The facility and many like it were in existence when the Clean Water Act was passed
  - Many have also come into existence since then
- Thus, the law focuses is on whether the water quality supports designated and existing uses *despite* the facility
  - Designated uses include fish habitat, other aquatic life, wildlife, water-related recreation, fishing, and boating
- The Connecticut River is a Class B water, so permissible uses include irrigation, other agricultural uses, and “compatible industrial cooling and process uses,” like a hydropower facility

What Information can MassDEP Consider?

- FirstLight's Application
  - Dozens of supporting documents and scientific studies filed with the application and other information submitted during the Certification process
- Public comments that are relevant to the Massachusetts Surface Water Quality Standards
- Settlement Agreements reached in the FERC process
- US Fish & Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Massachusetts Division of Fisheries and Wildlife (MassWildlife) 2024 Comments, Recommendations and Preliminary Prescriptions (prescriptions only for USFWS & NMFS)

What MassDEP Cannot Consider – Outside its Jurisdiction

- Decommissioning or establishing a decommissioning fund for the facility
- Altering the facility or operations for energy related reasons
- The license term
- Tribal historic and cultural interests that are not regulated under state water quality laws
- Economic, social, and societal impacts

Settlement Agreements

- The agreements were reached as part of the FERC relicensing process
  - FERC “looks with great favor on settlements” and if there is “substantial evidence” in deciding whether to adopt settlements in the FERC license
  - The agreements were reached in 2023 with many stakeholders after engaging in years of scientific studies and negotiations
  - MassDEP chose not to participate in the settlement agreements to remain independent for Certification proceedings and not bound by the Settlement Agreements

Settlement Agreements

- March 2023: FirstLight filed the Flows and Fish Passage Settlement Agreement with FERC
  - Some notable signatories include: US Fish & Wildlife Service, National Marine Fisheries Service, Massachusetts Division of Fish and Wildlife, The Nature Conservancy, New England Flow (a hydropower reform coalition)
  - Agreement resolved issues pertaining to: fish passage, flows for fish, ecological conservation, some recreation purposes, and protected, threatened, and endangered species
- June 2023: FirstLight filed a Recreation Settlement Agreement with FERC
  - Some notable signatories include: Massachusetts Department of Conservation and Recreation, Towns of Erving, Gill, Montague and Northfield, and Franklin Regional Council of Governments
- Terms of these agreements were included in the Certification application filed with MassDEP

USFWS, NMFS, MassWildlife 2024 Comments, Recommendations and Preliminary Prescriptions

- Section 10(j) of the Federal Power Act (FPA) generally requires FERC to include in the license USFW, NMFS, and MassWildlife conditions for the protection, mitigation, or enhancement of fish and wildlife
  - These can only be rejected by FERC if they are inconsistent with Federal law
  - FERC also determines what serves the public interest by balancing the power and non-power values to be considered in its license decision
- Section 18 of the FPA generally mandates incorporation of USFW and NMFS prescriptions for all measures relating to fish passage into the FERC license

Why Are the Settlement Agreements and Federal Comments, Recommendations, and Prescriptions Important?

- FERC strongly favors incorporation of settlement terms into the FERC license
- The MassWildlife, USFW and NMFS comments, recommendations, and prescriptions were based upon and endorsed the Flows and Fish Settlement Agreement
  - These agencies are fish and wildlife experts
  - Inconsistencies between Certification and settlements could unravel the settlements
- Therefore, high probability that Flows and Fish Settlement Agreement terms will be included as terms in the FERC license
- If MassDEP issues a Certification with conditions, any conflict between those conditions and the FERC license may ultimately be resolved in court, with uncertain outcome

What to Expect Tonight

- MassDEP will present an overview of what information it is considering regarding erosion and possible ways to address erosion
  - Followed by a question-and-answer session
- Massachusetts Division of Fish and Wildlife will present information on river flows and aquatic life related to the Flows and Settlement Agreement
  - Followed by related public comments and a question-and-answer session
- Massachusetts Department of Conservation and Recreation will present information related to water-related recreation from the Recreation Settlement Agreement
  - Followed by a question-and-answer session

Limits on Discussion Tonight

- MassDEP is in the middle of Certification review and deliberations

- We cannot comment on:
  - What specifically we intend to do or would like to do for the Certification
  - Our views of the evidence

What Comes After Tonight?

- Two more opportunities for public participation
  - MassDEP intends to issue a draft Certification decision in December or early January
    - Written public comment period on the draft
    - Virtual public hearing on the draft
- A Certification decision by April 22, 2025

Thank you!

Topic Q&A

Questions related to **WQC Process**?

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Review of Erosion-related Materials for the Water Quality Certification (WQC)

Turners Fall Hydroelectric Project (FERC Number 1889)
Northfield Mountain Project (FERC Number 2485)

MassDEP

Presentation Outline

- Erosion Causation
- FirstLight's Proposal in the WQC Application
- MassDEP's Review of FirstLight's Proposal in the WQC Application
- Public Comments Received and Reviewed

Erosion has been a Problem in the Impoundment

- Riverbank erosion due to natural and/or anthropogenic forces transports soil, rock, vegetation, and other materials downstream
- Erosion, if substantial, can impact plants, animals, and recreational uses
- The law provides that FirstLight is only responsible for erosion that its facility causes
- MassDEP is assessing the causes of erosion

Determining Erosion Causation is Complex

- Erosion variables are numerous and act individually or collectively
- Difficult to identify relative importance of each cause
- Forces are incredibly complex involving a wide array of sizes, gradations, and stratifications of bank material
- Pools, bends, straight reaches, hydropower operations, wind / boat generated waves, freezing and thawing, vegetation, etc. all have influence

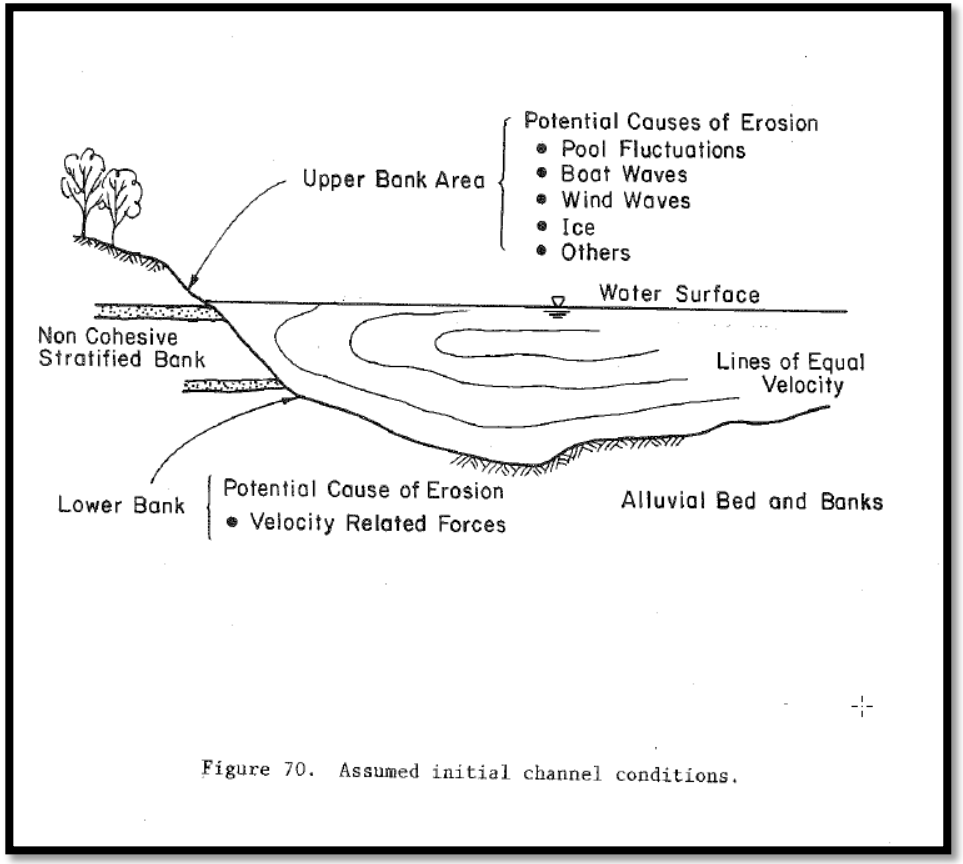


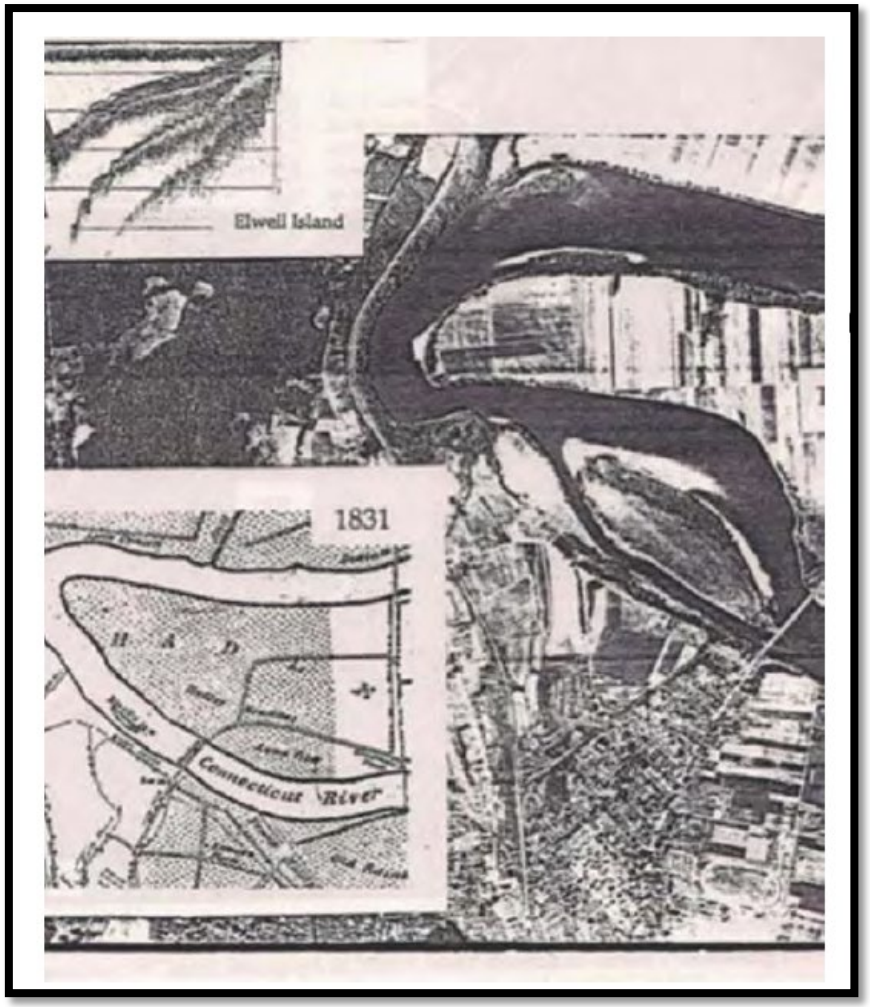
Figure 70. Assumed initial channel conditions.

(USACE, 1979) 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.

MassDEP

Erosion on the Connecticut River has been Studied Extensively

- Erosion analysis goes back decades
- The percent and location of hydropower-attributed erosion continues to be disputed
- MassDEP will consider all available Information



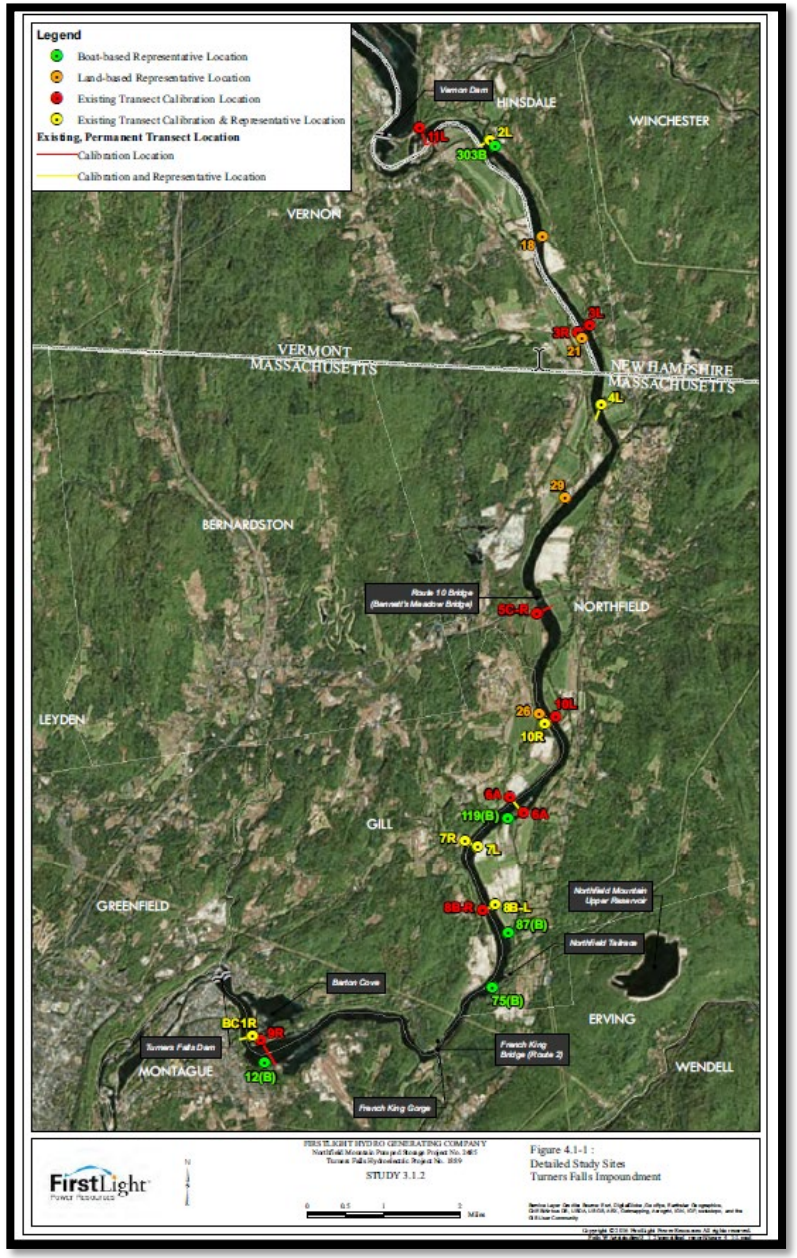
Riverbank Comparisons 1831 to 1958 (Reid 1990) as provided in the WQC Application

Erosion Studies include Qualitative and Quantitative Analysis

- 1979 – CT River Streambank Erosion Study: MA, NH, and VT (USACE)
- 1991 – General Investigation Study CT River Streambank Erosion (USACE)
- 2004 – Fluvial Geomorphology Assessment of the Northern Ct River (Field Geology Services)
- 2007 – Fluvial Geomorphology Study of the Turners Falls Pool on the CT River Between Turners Falls MA and Vernon, VT (Field Geology Services)
- 2008 - 2009 – Full River Reconnaissance, Turners Falls Pool, CT River (Simons and Associates)
  - 2011 – Detailed Analysis of the 2008 Full River Reconnaissance of the Turners Falls Pool on the CT River (Field Geology Services)
- 2013 - 2024 – Bank Stability and Toe Erosion Models
  - Peer Review Reports (e.g., Inter-Fluve, CRC / Dethier / FRCOG, etc.)

FirstLight's Erosion Analysis Relied on BSTEM Model with Field Data

- FirstLight relied upon a computer model to analyze the causes of erosion
- The computer model is known as BSTEM, which stands for Bank Stability and Toe Erosion Model
- The model uses historical data and other information to analyze the causes of erosion
- The model incorporated field conditions into the analysis



BSTEM Study Sites, *Relicensing Study 3.1.2 October 2016*

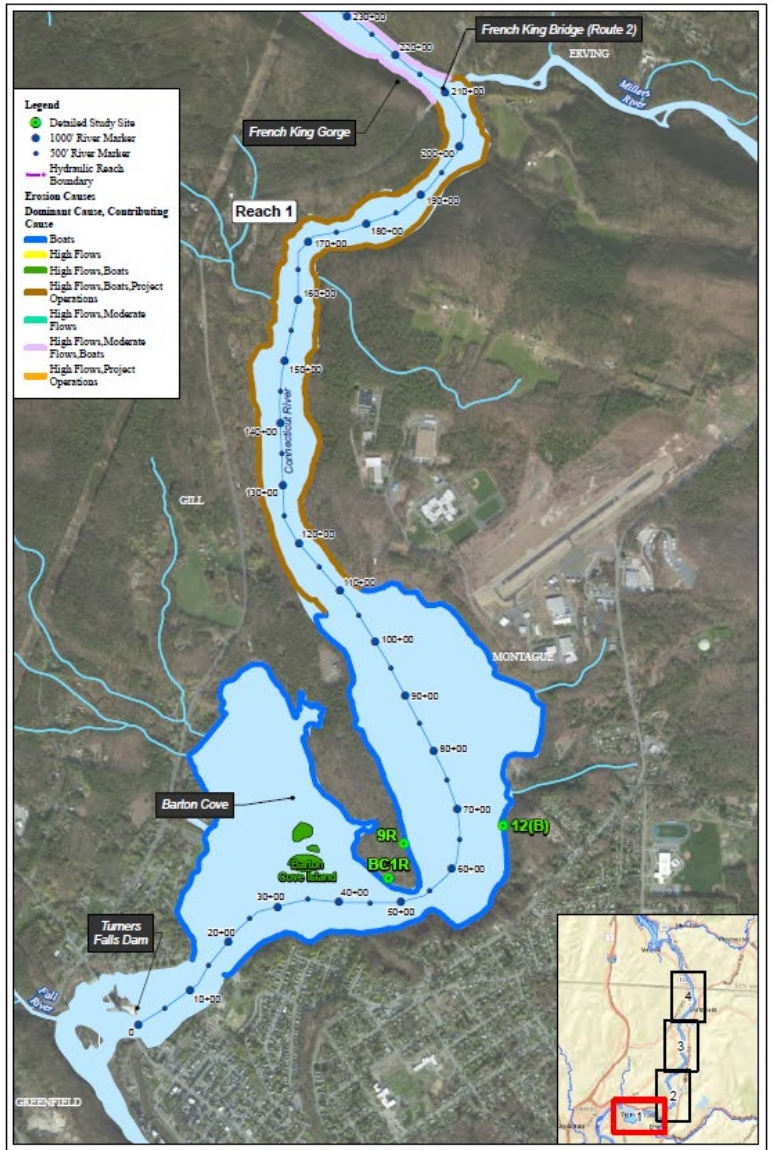
Results of FirstLight's BSTEM Models as Interpreted by FirstLight

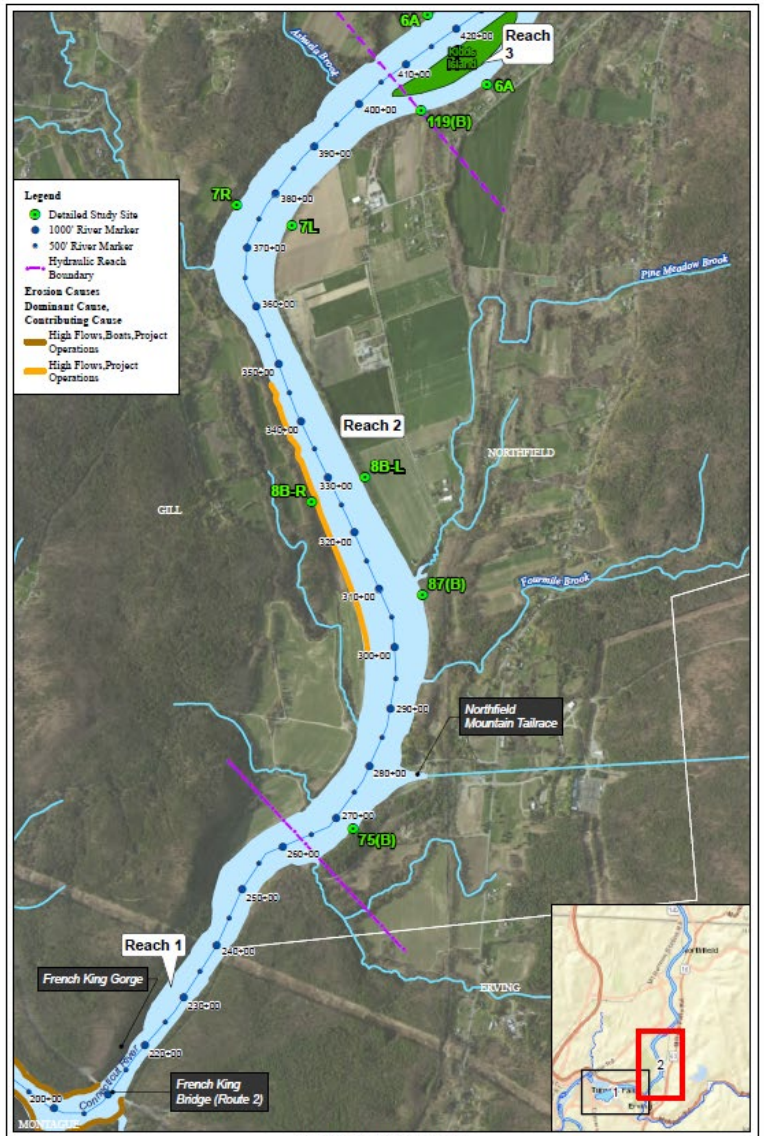
- Results were categorized by dominant causes and contributing causes

- The 2016 BSTEM report / model focused on causation for Northfield Mountain operations under the existing license

- Additional BSTEM reports / models focused on causation for FirstLight's proposed future river scenarios:
  - Modified Vernon Dam operations
  - Various operational changes including the Fish and Flow Agreement

- FirstLight's results for the 2024 BSTEM report / model were:
  - Dominant causes of erosion: high flows and boat waves
  - Contributing cause of erosion include operations 21,600' of erosion between Barton Cove to French King Gorge and 4,700' on river right upstream of the Northfield tailrace


French King Bridge (Route 2)
EROING
French King Gorge
Reach 1
Legend
Detailed Study Site
1000' River Marker
500' River Marker
Hydraulic Reach Boundary
Erosion Causes
Dominant Cause, Contributing Cause
Boats
High Flows
High Flows,Boats
High Flows,Boats,Project Operations
High Flows,Moderate Flows
High Flows,Moderate Flows,Boats
High Flows,Project Operations
Connecticut River
GILL
MONTAGUE
Barton Cove
Barton Cove Island
9R
BC1R
12(B)
Turners Falls Dam
Fall River
GREENFIELD
Miller's River
FirstLight
Figure 1. BSTEM Modeling Results for Massachusetts Riverbank Segments Map 1


Reach 3
6A
119(B)
Reach 2
7R
7L
8B-L
8B-R
87(B)
Pine Meadow Brook
Fourmile Brook
NORTHFIELD
GILL
Northfield Mountain Tailrace
75(B)
Reach 1
French King Gorge
EROING
French King Bridge (Route 2)
MONTAGUE
Legend
Detailed Study Site
1000' River Marker
500' River Marker
Hydraulic Reach Boundary
Erosion Causes
Dominant Cause, Contributing Cause
High Flows,Boats,Project Operations
High Flows,Project Operations
FirstLight
Figure 2. TFI Riverbank Segments Subject to Future Erosion Monitoring Map 2

Review of Erosion in the Turners Falls Impoundment (2024) (Connecticut River Conservancy/ FRCOG / Dr. Evan Dethier)

- Peer review of BSTEM methodology with scientific literature review

Takeaways from the Dethier Report:

- Results, as reported by FirstLight, are underreported and hydropower-attributed erosion occurs throughout the impoundment
- Recommendations include:
  - increased future monitoring
  - decreased operational / fluctuation range
  - further bank stabilization projects if flow modification unsuccessful

Review of the BSTEM Modeling and Reporting Northfield Mountain and TF Hydroelectric Project (Inter-Fluve 2024)

- Peer review conducted for MassDEP to determine how the BSTEM results may demonstrate compliance with the Massachusetts Surface Water Quality Standards (SWQS).

Takeaways from the Inter-Fluve Report:

- The BSTEM simulations and reports are an extensive body of work developed through a collaborative processes (with opportunities for stakeholder input) and executed by competent professionals.

- Model results have limitations with respect to providing assurance that the proposed relicensed operations will be conducted in a manner that will not violate SWQS.

FirstLight's Proposal in the WQC Application

FirstLight's Proposed Streambank Erosion Plan

- Boat wake restrictions in coordination with MassDCR
- Following the issuance of the WQC, FirstLight will develop a Shoreline Erosion Monitoring Plan to be approved by MassDEP
- FirstLight will conduct shoreline erosion surveys (River Reconnaissance) in Year 1, 10, 20, 30, and 40:
  - Characterizes riverbank and erosion conditions
  - Cross sections, prioritize existing survey sites (2013 River Recon) but can develop new ones
  - Only includes riverbank segments where BSTEM shows hydropower-attributable erosion
- Summary report will identify locations that require stabilization or repair (if previously stabilized)
- Stabilization / construction will occur within 5 years and requires post-construction as-builts.

MassDEP's Review of FirstLight's Proposal in the WQC Application

Assessing the Hydropower-attributed Erosion through the WQC Process

Existing Erosion

- Assurance that the existing hydropower-attributable erosion will be addressed to attain compliance with the SWQS

Future Erosion

- Assurance that the future hydropower-attributable erosion will be addressed to attain compliance with the SWQS
- Public comment and MassDEP responses are part of the process

Public Comments Received and Reviewed

Comments were received from Legislators, Organizations, Towns, and Engaged Citizens. Many of these included Erosion Recommendations.

- **Legislative Delegation** (Senator Comerford, Representatives Blais / Carey / Domb / Sabadosa / Saunders)
- **City / County Entities** (FRCOG, Gill, Montague, Northfield, Franklin County Chamber of Comm., Gill CC…)
- **Tribes** (Nolumbeka Project Tribal Coalition)
- **Utilities** (Belmont MLD, Middleton ELD, Norwood MLD, Taunton ML, Wellesley MLP, Energy New England)
- **Organizations and Nonprofits** (CRC, American Rivers, Greater Northfield Watershed Association, International Brotherhood of Electrical Workers Local Union, League of Women Voters of Amherst, Mass. Business Roundtable, NRC...)
- **Engaged Citizens, Stakeholders, and Property Owners** (Bathory / Gallagher / Wallace / Watson…)

https://www.mass.gov/doc/firstlight-power-401-wqc-public-comments-excluding-crc-frcog-attachments/download

Erosion-related Comments Mainly Focused on Future Concerns

- Numerous Comments Received about Future Operations
  - Minimize / limit river fluctuations
  - Reestablish riparian buffers
  - Require bank stabilization projects / extend 1999 Erosion Control Plan
  - Control invasive species that destabilize banks
  - Monitor for future erosion
  - Collect / publish data on river elevations and fluctuations
- Fewer Comments Received about Current State of the River

May 2024 Bathory / Gallagher Site

Topic Q&A

Questions related to **Erosion**?

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MassWildlife Interests and Jurisdiction

- Conservation and management of fish and wildlife resources, recreational fisheries
  - Upstream and downstream fish passage
  - Entrainment and impingement protection
  - Improved flows
- MA Endangered Species Act
  - Requires protection and enhancement of state-listed rare species and habitats
  - 25 State- and Federally-listed species
    - Sturgeon and other fishes (3)
    - Freshwater mussels (3)
    - Beetles (2)
    - Dragonflies (7)
    - Plants (10)

Ecological Impacts of Dams

- Healthy large rivers support greater biodiversity than smaller rivers, streams or lakes
  - Free flowing
  - Unimpeded access to all necessary habitats
  - Stable flows that change seasonally
- Dams dramatically impact the local ecosystem by:
  - Transforming rivers into lakes
  - Blocking migration of fish and wildlife
  - Injuring or killing fish passing through turbines or over dams
  - Altering natural flow of rivers
    - Daily and seasonal changes
    - Affects continue for miles downstream
    - Great detriment of fish and wildlife
- CT River one of most extensively dammed rivers in U.S.
  - 75% impounded vs. 25% free-flowing

FERC Process

- Federal Power Act requires project owner to consult with State and Federal Fish and Wildlife Agencies during relicensing
- FERC-approved studies are performed
- Agencies and FirstLight submit proposed Terms and Conditions for new license
- FERC staff review all evidence and recommend final Terms and Conditions
    - FERC typically seeks to balance competing power and non-power interests
    - Any party can appeal

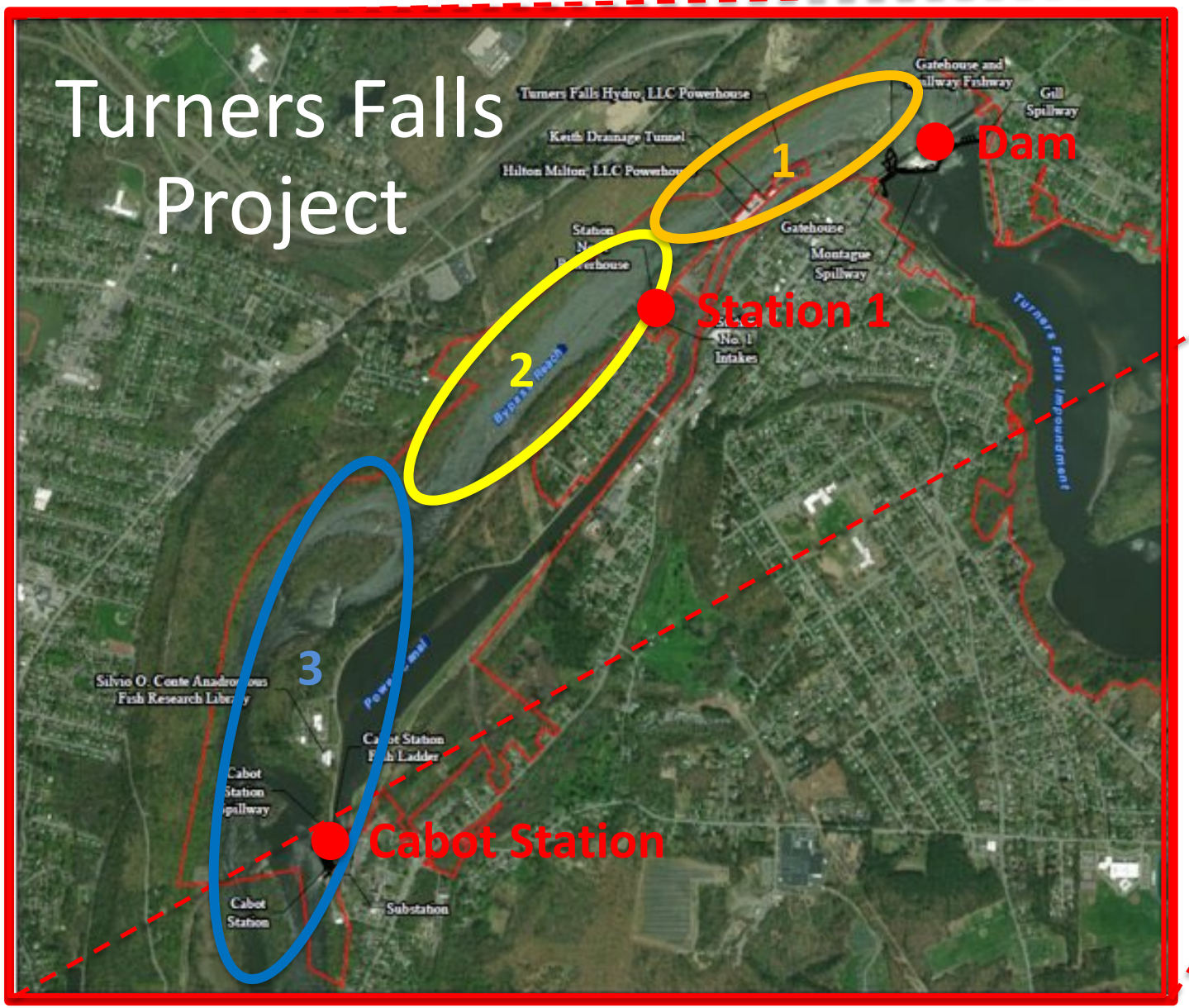
Settlement Agreement

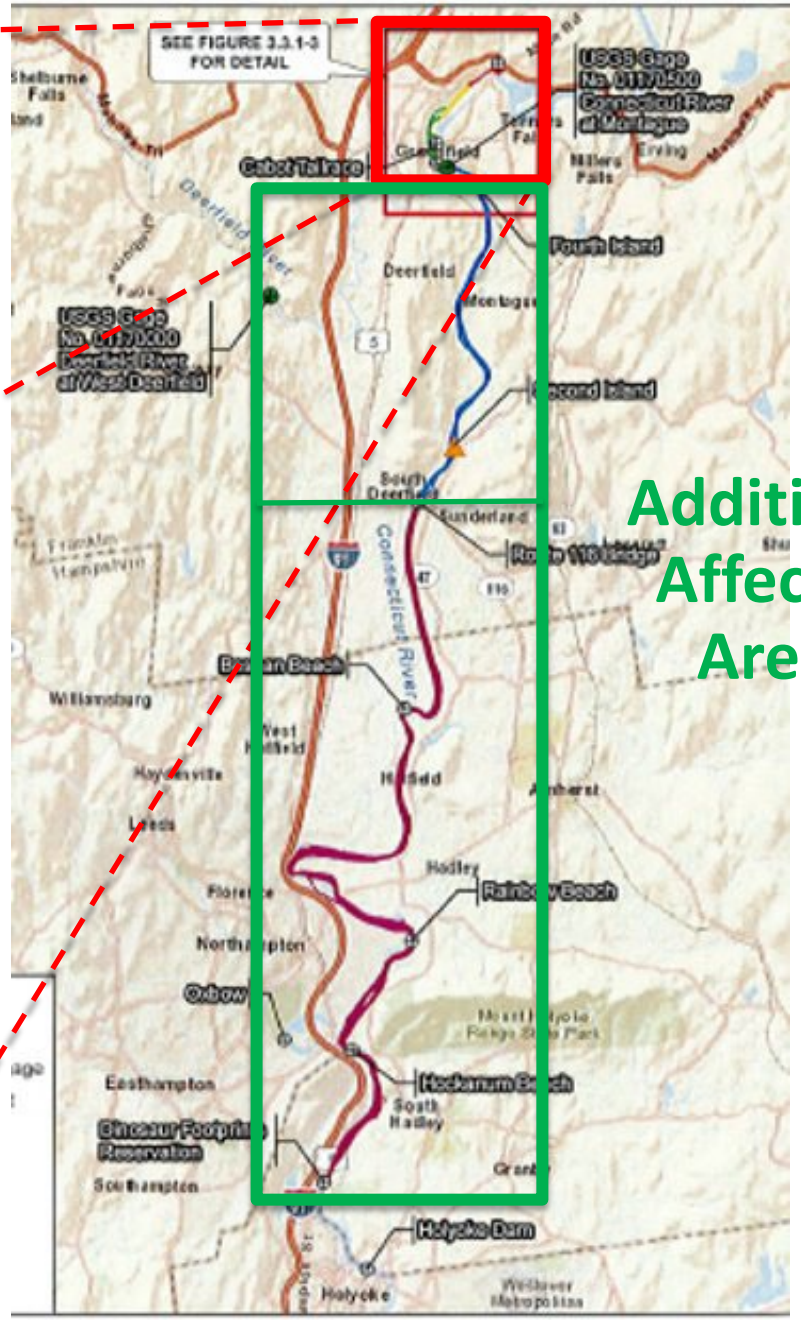
- FirstLight sought a negotiated Settlement Agreement where all parties agree to recommended Terms and Conditions of new license before these are submitted to FERC

- Years of negotiations between FirstLight, MassWildlife, U.S. Fish & Wildlife Service, National Marine Fisheries Service and NGO's

- Some Terms and Conditions mirror those associated with concurrent relicensing of Wilder, Bellows Falls and Vernon hydro facilities in VT

Turners Falls Project





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Additional Affected Areas

5

Turners Falls Project
Issues Addressed by Settlement Agreement

- Flows Below Dam (e.g. Bypass Reach)
- Flows Below Cabot Station
- Downstream Fish Passage
- Upstream Fish Passage
- Northfield Mountain Entrainment

Bypass Reach: Current vs. Settlement

Current License		Settlement
• May - July 15: 400 cfs	→	• April and May: 6,500 cfs(below Station 1) • June 1-15: 4,500 cfs (below Station 1) • June 16-30: 3,500 cfs (below Station 1)
• July 16 - Nov 15: 120 cfs	→	• July - Nov 15: 500 cfs (from Dam) + eco flows • July - Aug: 1,800 cfs (below Station 1) + eco flows • Sept - Nov 15: 1,500 cfs (below Station 1) + eco flows
• Nov 16 – April: No minimum	→	• Nov 16 - March 30: 400 cfs (from Dam) • Nov 16 - March 30: 1,500 cfs (from Station 1)

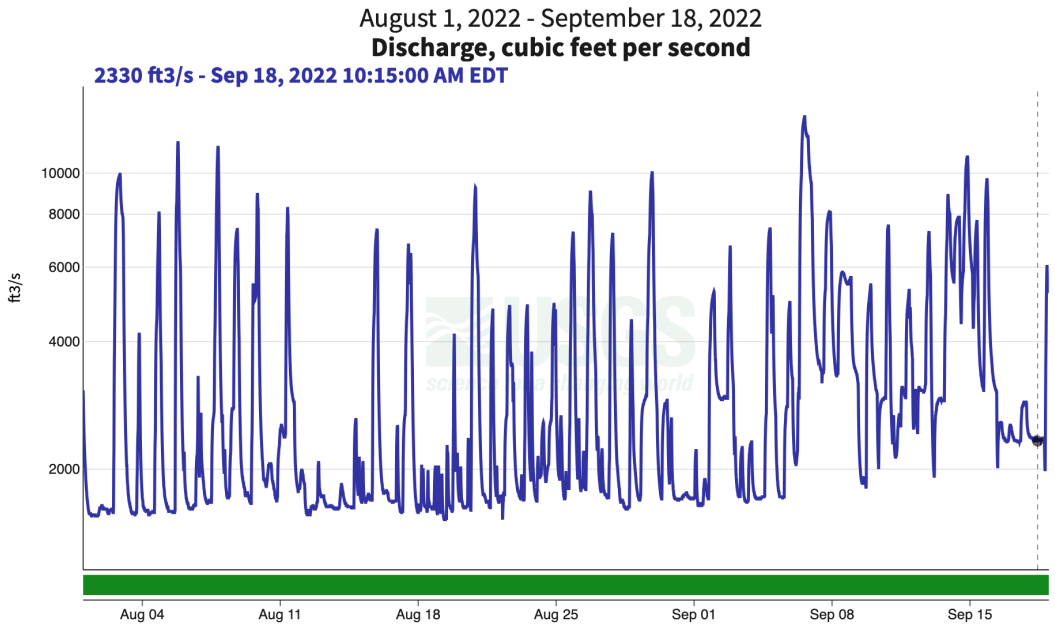
Bypass Reach: Benefits of Settlement

Settlement flows would provide significant increases in fish habitat:

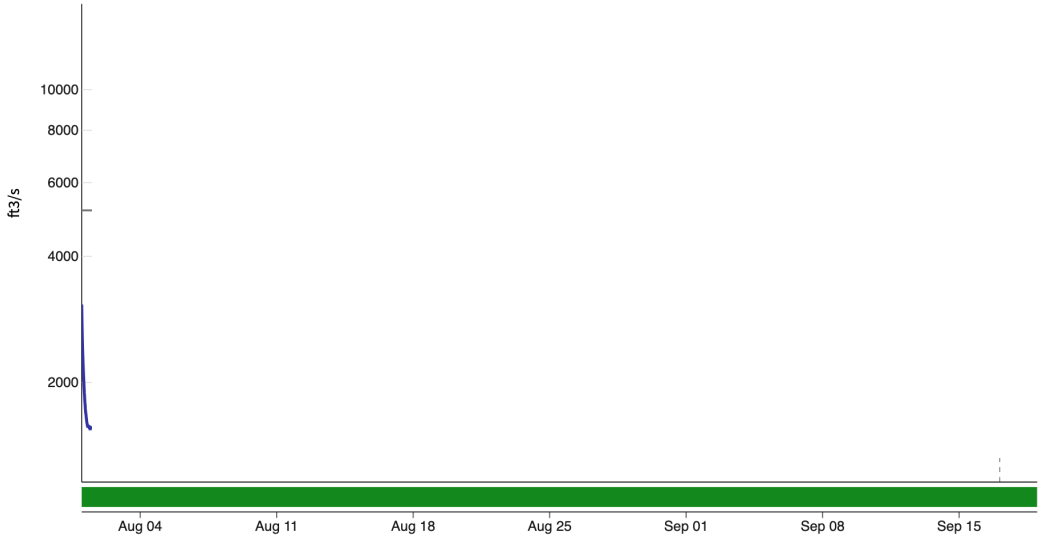
- Shad
  - Spawning: +73%; Juvenile: +88%
- Sea lamprey
  - Spawning: +84%
- Sturgeon:
  - Spawning: +96%; Eggs & Larvae: +100%; Fry: +73%
- Resident Riverine Fish Species:
  - +53 - 81% summer through early spring

Hydro-peaking vs. Naturalized Flows

Current License



Settlement (example)



Peaking Flows

- Habitat inundation / desiccation
- Displacement / stranding
- Decreased reproduction / survival / growth
- Reduced biodiversity / resilience

Naturalized Flows

- Improved habitat quantity, quality, persistence
- Increased reproduction / survival / growth
- Increased biodiversity / resilience

Below Cabot Station: Current vs. Settlement

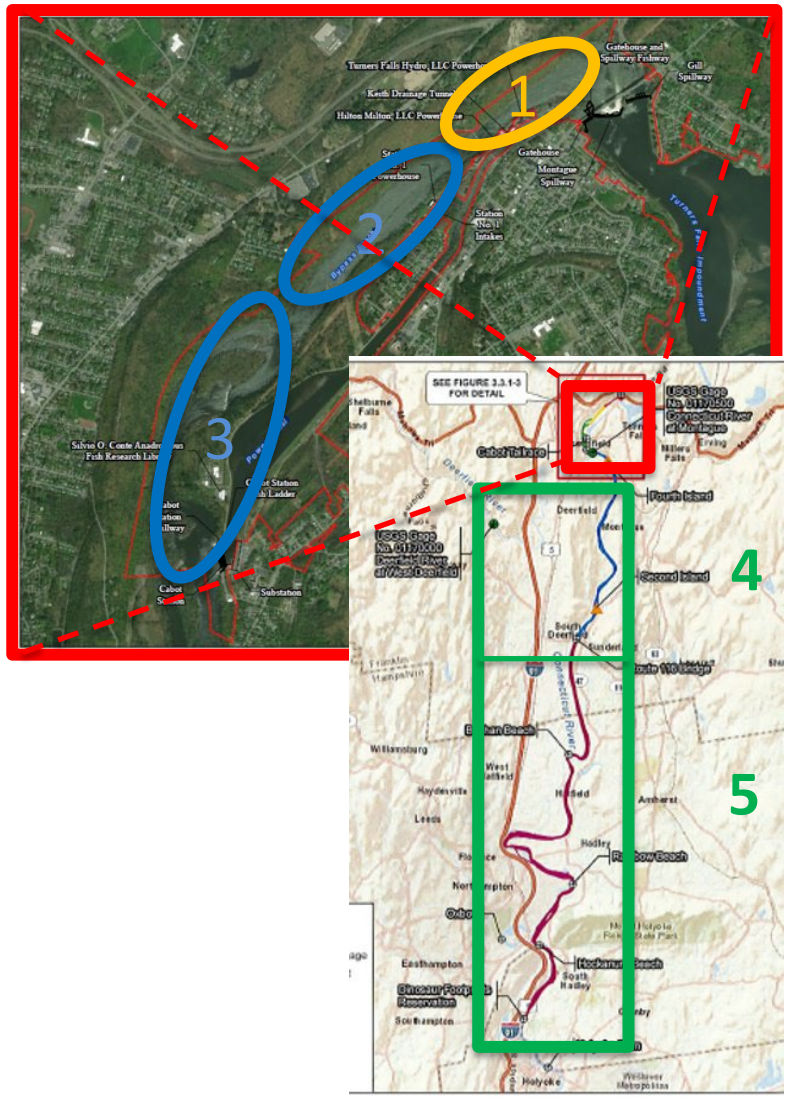
Current License	Settlement

• Hydro-peaking: No limits	• Flow Maximums and Timing
	  • April - Nov: Naturalized flows
	  • July - Nov: Limited number of hydro - peaking events and hours

• Minimum Flows: 1,433 cfs	• Minimum Flows
	  • Dec - March: 3,800 cfs
	  • April - June: 5,800 - 8,800 cfs
	  • July - November: 1,500 - 1,800 cfs

Summary: Benefits of Settlement

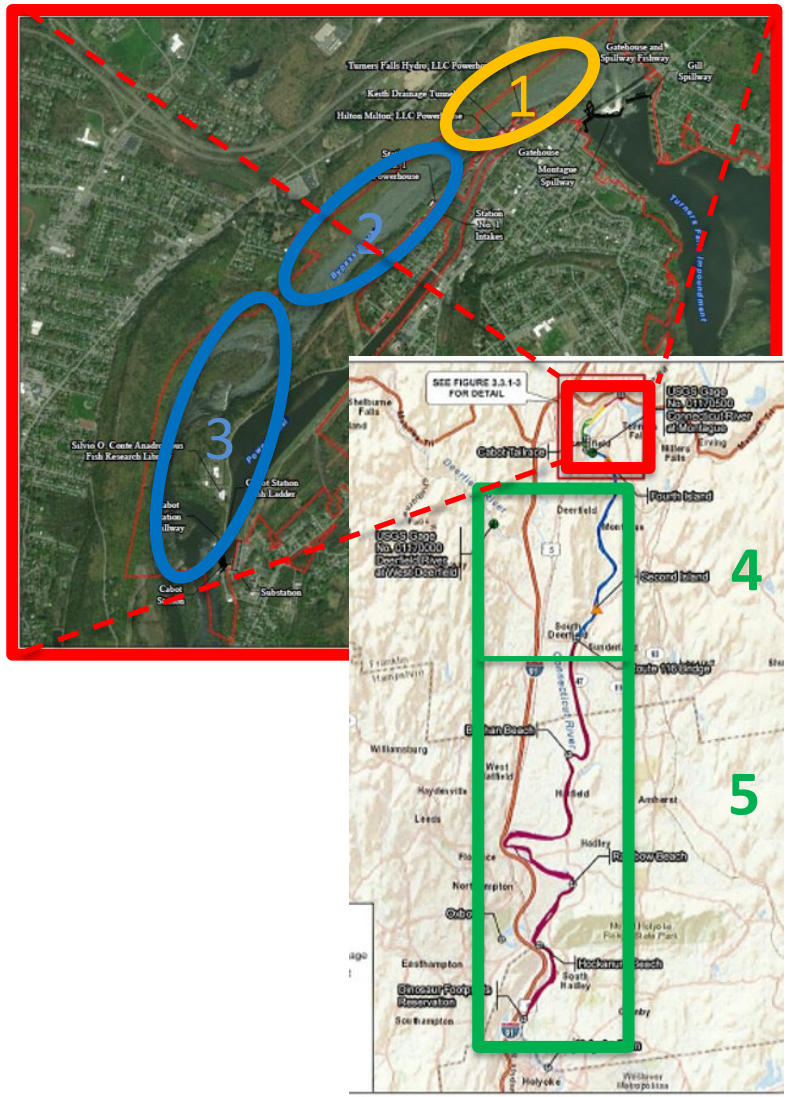
- Bypass Reach
  - Moderate (Reach 1) to significant (Reaches 2-3) gains in Minimum Flows
  - Conservation flows to add natural variability
- Downstream of Cabot Station
  - Significant shift toward Naturalized Flows
  - Gains Minimum Flows
- Overall
  - Significant fish and wildlife benefits for close to 30 miles of free flowing river (Reach 2-5)
  - Moderate fish and wildlife benefits for 0.75 miles of CT River (Reach 1)*
  - Enhanced outdoor recreation, from fishing to thru-paddling
  - Mitigation for unavoidable impacts



Bypass Reach 1: Settlement Considerations

Balancing Interests

- Improves flows for aquatic life and outdoor recreation, but caps impacts to state-listed plants and power generation
- Requests to increase flows from 500 to >1,500 cfs would result in **<10% increase** in wetted area (benefiting common insects / fishes) *but....*
  - Same common species will benefit *hugely* from Settlement
    - Reach 1 = 0.7 miles *vs.* Reaches 2-5 = close to 30 miles
  - Would result in >95% loss of state-listed plant populations (one species found no where else in Massachusetts)
  - 500 cfs would already result in 40 - 60% loss of state-listed plant populations in Reach 1 and significantly higher impacts in Reaches 2-3



Current Fish Passage

- Inadequate downstream passage protection
  - Cabot: full depth trash rack, 10' fish rack, surface bypass at end of rack (trash sluice)
  - Station 1: trash racks only
  - Dam: no plunge pool
  - Northfield Mountain: fish net designed for salmon
- Complex and underperforming upstream fish passage system
  - Cabot ladder: very poor for shad, modifications only marginally successful
  - Spillway ladder: limited usefulness due to low flows below dam
  - Gatehouse ladder: very poor for shad, major modifications helped
- No upstream eel passage

Proposed Improvements to Downstream Fish Passage

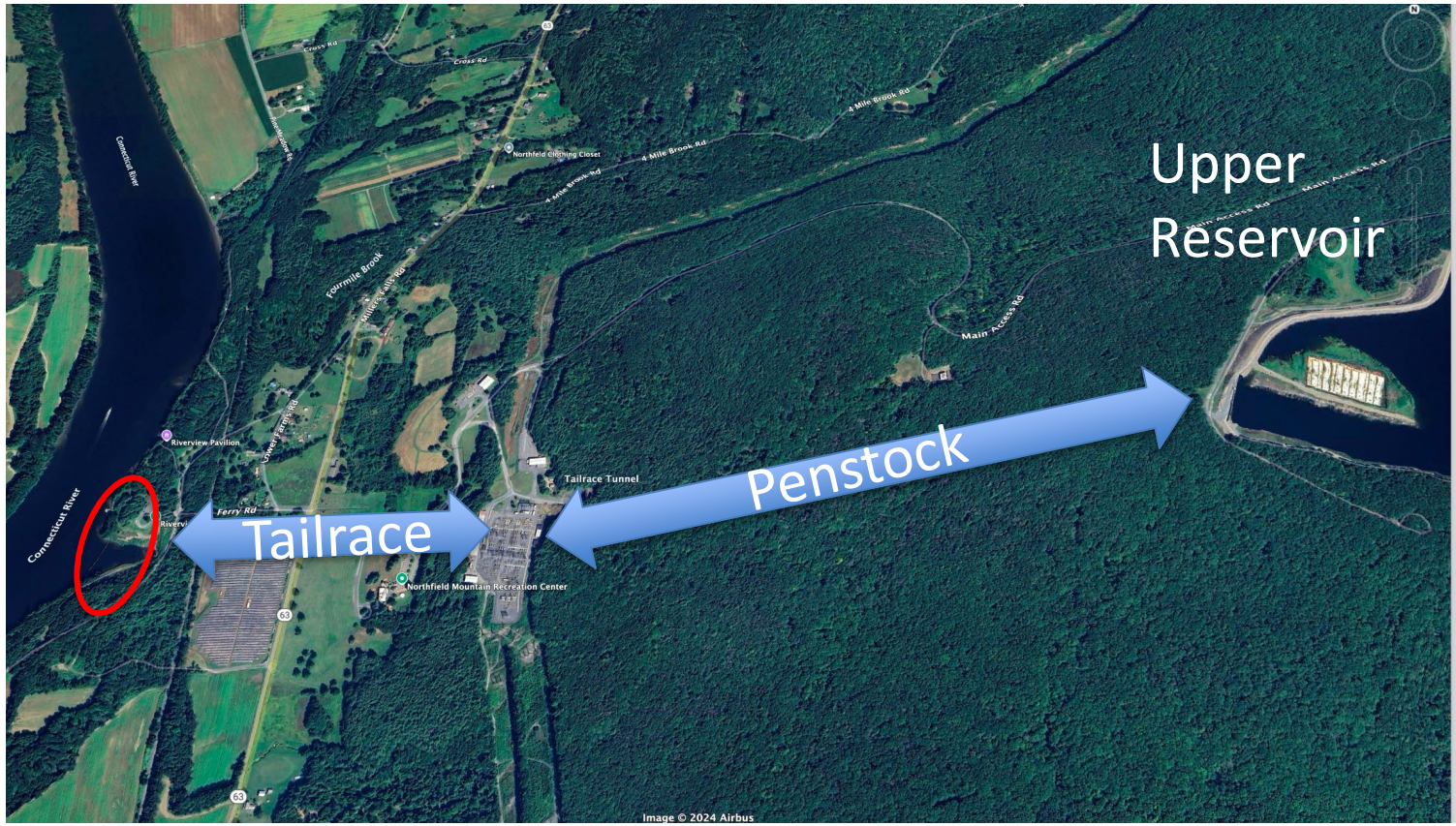
- Replace the existing Cabot Station trash rack with a full depth rack that will have multiple openings for fish passage and better protect Shad and Eel.
- Construct a fish exclusion rack at the entrance to Station 1 canal that will keep most fish out of units.
- Construct a plunge pool downstream of the Turners Falls Dam Bascule Gate No. 1 to protect fish that go over the dam.

Proposed Improvements to Upstream Fish Passage

- Retire Cabot Ladder
- Replace Spillway Ladder with a Fish Lift at Dam
  - Take advantage of increased spring flows to direct fish to dam
  - Lift at dam will keep fish out of power canal, reducing delays and eliminating the need for Gatehouse Fish Ladder
- Install upstream Eel passage
  - Long overdue; thousands of elvers passing at Holyoke for 20 years

Northfield Mountain Issues Addressed

- Install a barrier net in front of the Northfield Mountain tailrace/intake to reduce fish entrainment.
  - Resident fish
  - American Shad
  - American Eel



Fish Passage Performance Goals

- Settlement contains specific goals for performance of the fish passage facilities.
- Older licenses had targets for the total number of fish passed- but that is dependent on many factors outside of the facility.
- These goals specify the minimum percentage of fish that reach the dam that should successfully pass.
- These goals specify the maximum time that fish that reach the dam should be passed.

Fish Passage Performance Goals

Downstream Passage

- 95% of adult American Shad arriving 1 kilometer upstream of the Turners Falls Dam survive migration past the Turners Falls Project within 24 hours.

Upstream Passage

- 75% of adult American Shad arriving 500 meters below Cabot Station successfully pass into the Turners Falls Impoundment within 48 hours.

Evaluation and Adaptive Management

- All new fish passage structures will be evaluated against these performance goals
- Failure to meet goals results in adaptive management
  - Structures and or operations changed
  - Reevaluate
  - Repeat

Evaluation and Adaptive Management

Table 10.4.1 Turners Falls Upstream Adaptive Management Measures – Tier 1 and 2. Specified timing is years after license issuance.

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 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 adaptative 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 will 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 will 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 will 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 • 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 will 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.	Years of Initial Effectiveness Testing: **Years 10-11** Time Needed to Implement AMM(s): **Year 0** since all Tier 1 AMMs are operational Years of Post AMM Effectiveness Testing: **Years 13-14**

Table 10.4.1 Turners Falls Upstream Adaptive Management Measures – Tier 1 and 2 (continued)

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) will 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) will 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 • 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 MDFW, NMFS, USFWS, recreational boating and Tribal interests 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 Staton No. 1 will 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 will be reduced back to 4,500 cfs. Station No. 1 Node • 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 will 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 will 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.	Time Needed to Implement AMM(s): **Year 15-16** Shakedown: **Year 17** Years of Post AMM Effectiveness Testing: **Years 18-19**

Common Public Comment Themes Related to Flows and Fish

- Flow immediately below the dam should not be limited to 500 cfs
- More robust monitoring of water quality
- Prevent and address invasive plants
- Confine impoundment water elevations to a narrower range and specific monthly average of fluctuation
- Implement fish passage conditions more expeditiously
- Prevent or limit impacts from expanded upper reservoir
- Provide more real-time data for the public for dam and Northfield flows

Topic Q&A

Questions related to **Flows and Fish**?

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Recreation Settlement Agreement

Water Quality Related Projects
Public Information Session, October 10, 2024

dcr
Massachusetts

Recreation Settlement Agreement

Background

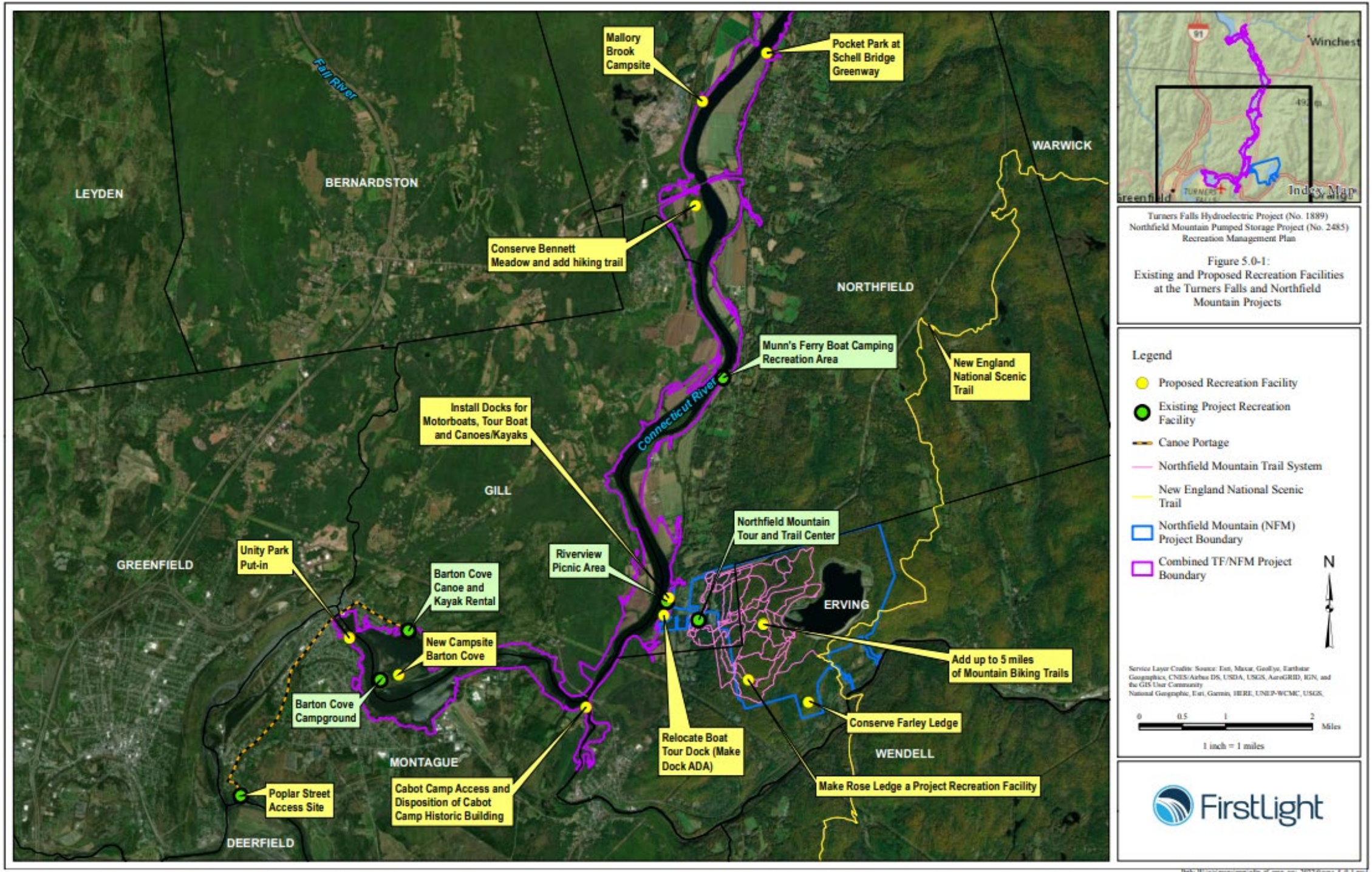
- Relicensing process kicked off in 2012 with meetings, studies, and license filings.

- DCR, as the state's agency charged with promoting conservation and recreation, participated with other parties in Recreation Settlement discussions in 2021-23 along with the National Park Service, American Whitewater, Appalachian Mountain Club, New England FLOW; Towns of Erving, Gill, Montague, Northfield; Franklin Regional Council of Governments; and private non-profit organizations.

- The Recreation Settlement Identifies improvements FirstLight will make:
  - Estimated $6M in recreation improvements
  - Permanent conservation of certain FirstLight lands

- Process:
  - Incorporates preferences and priorities of federal, state, and local entities
  - Review every 10 years re: recreation use and demand
  - Guided by Recreation Advisory Group (members of settling parties)

dcr
Massachusetts


Mallory Brook Campsite
Pocket Park at Schell Bridge Greenway
Fall River
LEYDEN
BERNARDSTON
WARWICK
Conserve Bennett Meadow and add hiking trail
NORTHFIELD
Munn's Ferry Boat Camping Recreation Area
New England National Scenic Trail
Connecticut River
Install Docks for Motorboats, Tour Boat and Canoes/Kayaks
GILL
Northfield Mountain Tour and Trail Center
Unity Park Put-in
Riverview Picnic Area
GREENFIELD
Barton Cove Canoe and Kayak Rental
ERVING
New Campsite Barton Cove
Add up to 5 miles of Mountain Biking Trails
Barton Cove Campground
Conserve Farley Ledge
Relocate Boat Tour Dock (Make Dock ADA)
WENDELL
MONTAGUE
Make Rose Ledge a Project Recreation Facility
Poplar Street Access Site
Cabot Camp Access and Disposition of Cabot Camp Historic Building
DEERFIELD
Index Map
Turners Falls Hydroelectric Project (No. 1889)
Northfield Mountain Pumped Storage Project (No. 2485)
Recreation Management Plan
Figure 5.0-1:
Existing and Proposed Recreation Facilities at the Turners Falls and Northfield Mountain Projects
Legend
Proposed Recreation Facility
Existing Project Recreation Facility
Canoe Portage
Northfield Mountain Trail System
New England National Scenic Trail
Northfield Mountain (NFM) Project Boundary
Combined TF/NFM Project Boundary
N
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS,
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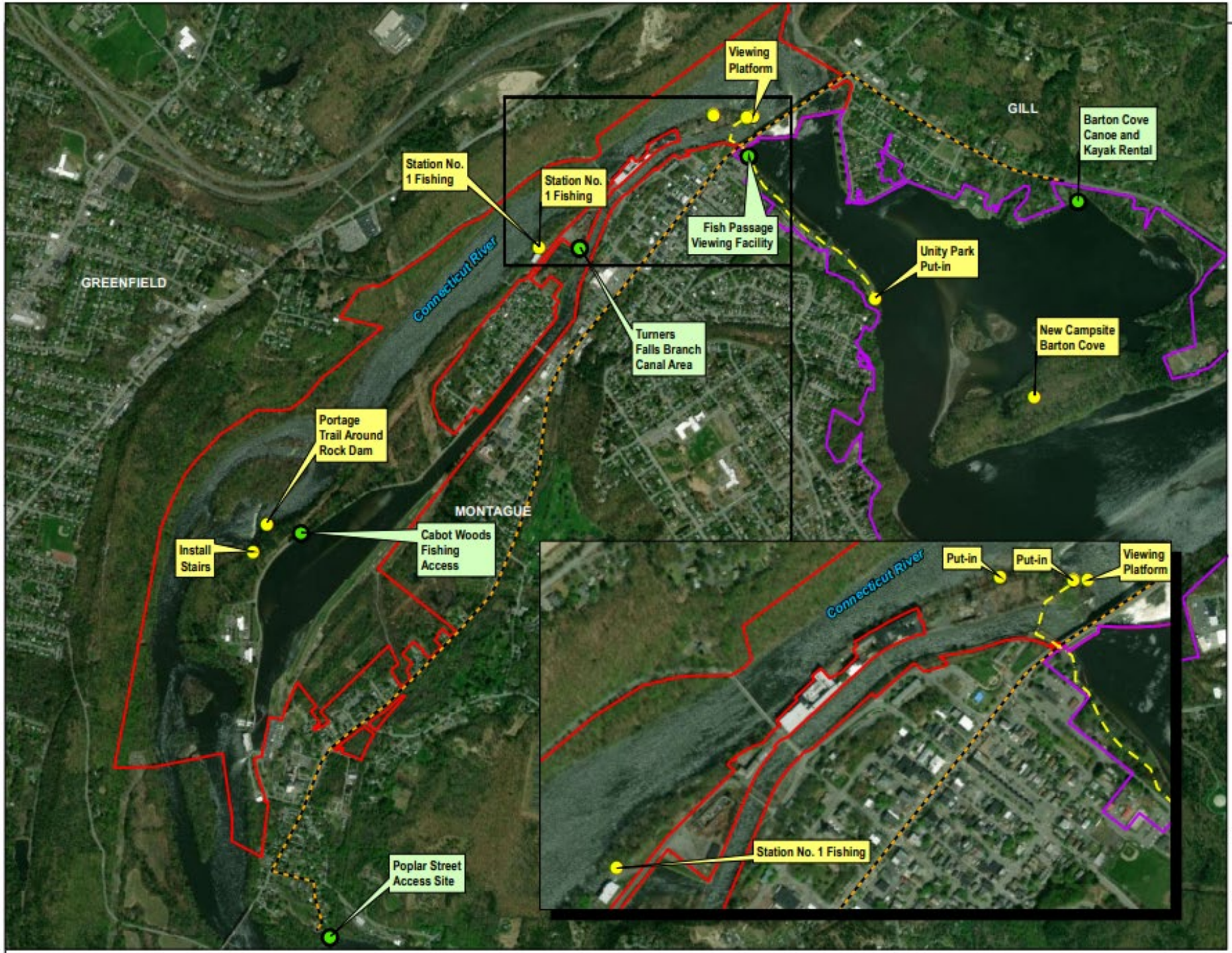
1 inch = 1 miles
FirstLight



Turners Falls Hydroelectric Project (No. 1889)
Northfield Mountain Pumped Storage Project (No. 2485)
Recreation Management Plan

Figure 5.0-2:
Existing and Proposed Recreation Facilities at the Turners Falls and Northfield Mountain Projects
Blown-Up Map below Turners Falls Dam

Legend

- Proposed Recreation Facility
- Existing Project Recreation Facility
- Walking Portage
- Canoe Portage
- Turners Falls (TF) Project Boundary
- Combined TF/NFM Project Boundary

N

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, iacrement P Corp.

0 0.1 0.2 0.4 Miles

1 inch = 0 miles

FirstLight

Recreation Settlement Agreement

Water Quality, Water Access, and Conservation

Conservation Projects

- Total of 761.4 acres to be included in Conservation Restrictions in 5 towns

Public Comment Themes for Water Related Recreation

- Good water quality is important for recreation activities
- Concerned that lack of notice for impoundment level changes affect recreation opportunities
- Concerned that erosion will affect recreation opportunities
- Concern regarding recreation having negative impact on shortnose sturgeon spawning
- Flow directly below and adjacent to the dam is too low for boating
- Seven out of nine comments on recreation agreement supported it (6 were signatories)

Topic Q&A

Questions related to **Recreation & Water Quality**?

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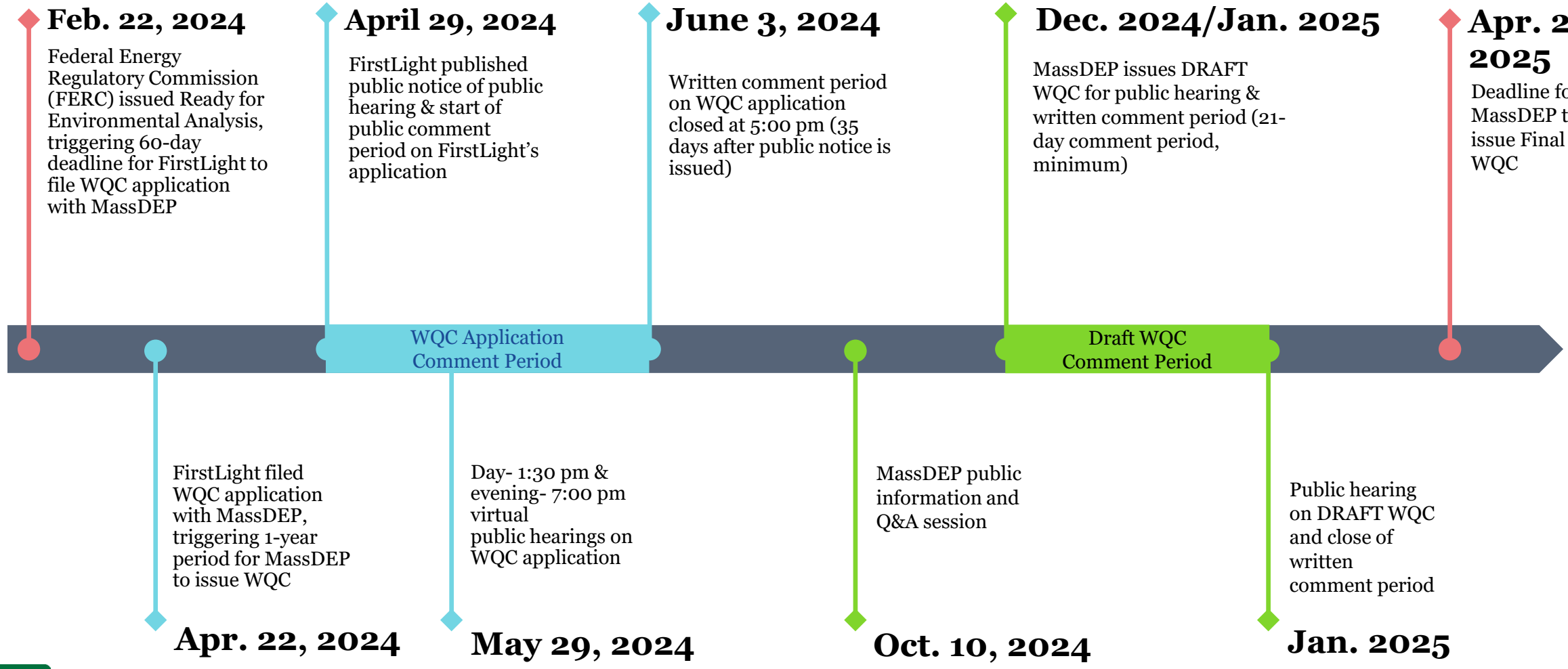
MassDEP FirstLight Water Quality Certification Public Involvement Timeline

(with some approximate dates)



https://www.mass.gov/info-details/401-wqc-for-the-firstlight-hydroelectric-re-licensing-project

UPDATED 4/25/24

To Learn More and Stay Involved

- Tonight's slides and recording will be posted on MassDEP's website: https://www.mass.gov/info-details/401-wqc-for-the-firstlight-hydroelectric-re-licensing-project
  (or search "MassDEP FirstLight")

- Many other resources are available on this website.

OFFERED BY Massachusetts Department of Environmental Protection

401 WQC for the FirstLight Hydroelectric Re-Licensing Project

Information and updates on MassDEP's 401 Water Quality Certification (WQC) for FirstLight's Connecticut River hydroelectric facilities in Turners Falls and Montague and the pumped storage facility in Northfield, Massachusetts.

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).

Updates for WQC Process

MassDEP will periodically provide substantive updates in this section.

- This webpage was updated on September 18, 2024 to add a registration link to the *Public Involvement in 401 WQC Process* section regarding the public information session on October 10, 2024.

Updates for FERC Relicensing Process

More information about the FERC relicensing process for the above FirstLight facilities can be found here: FERC Online - Home Page or https://ferconline.ferc.gov/FERCOnline.aspx

Website last updated or checked for necessary updates on September 19, 2024.

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Thank you!

Open Q&A

Questions?

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