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September 15, 2025

VIA Electronic Mail

Ms. Laura Paye
Hydropower Coordinator
Bureau of Land Resources
17 State House Station,
Augusta, Maine 04333-00017

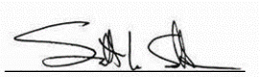
Re: Downeast Salmon Federation Comments - Maine DEP Water Quality Certification, Ellsworth Hydroelectric Project (FERC Project No. 2727), DEP Project #L-13256-33-M-N.

Dear Laura:

Attached please find the Downeast Salmon Federation's (DSF) comments for inclusion into the administrative record in the above referenced matter.

Thank you in advance for your consideration of these comments and DSF looks forward to participating in the Water Quality Certification process. Please do not hesitate to contact me if you should have any questions.

Respectfully,



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DOWNEAST SALMON FEDERATION

September 15, 2025

VIA REGULAR AND ELECTRONIC MAIL

Ms. Laura Paye
Hydropower Coordinator
Bureau of Land Resources
17 State House Station,
Augusta, Maine 04333-00017

RE: Comments on Brookfield Renewable Energy Group, Black Bear Hydro Partners LLC's, *DEP Application #L-13256-33-M-N, Ellsworth Hydroelectric Project*, Application for §401 State Water Quality Certification, (FERC Docket P-2727) a re-application of a previously denied WQC.

Dear Ms. Paye:

On behalf of the Downeast Salmon Federation ("DSF"), please accept these comments for inclusion into the record for the Maine Department of Environmental Protection's ("MDEP") review of the latest re-submitted application ("Re-application") of Black Bear Hydro Partners, LLC ("Applicant" or "Brookfield"[1]) to receive a water quality certification ("WQC") for its Union River hydropower project.

As stated in DSF's November 6, 2019 Comments[2] to the original application, DSF has a direct interest in this certification process. The issuance of a WQC, as part of the FERC re-licensing for this project, will directly affect each of our members' aesthetic and recreational use of the Union River, and our interest in restoring the fisheries and enhancing the biodiversity of the river. Specifically, DSF is identifying Mr. Edward A. Damm, a DSF member, who among other members, is and will suffer a particularized injury should the Re-application be approved as applied for. Specifically, Mr. Damm has observed during three consecutive years no grow back of Eastern elliptio mussels that used to number in the thousands in front of 900 feet of shoreline property that he owns on Graham Lake. The population was observed to decline and coincided with a drop to a 101 foot elevation in Graham Lake's water level (from 104 feet) due to Brookfield's operational drawdown during the summer months. Consistent with DSF's organizational purpose he has been active in fisheries restoration activities, is an intervenor in this matter and lives on the shores of Graham Lake, in the Project area and in close proximity to

[1] Black Bear Hydro Partners. LLC is a wholly owned subsidiary of Brookfield Renewable Partners. Brookfield is a publicly traded limited partnership that, through its various direct and indirect subsidiaries, owns and operates over thirty hydropower projects in Maine as well as thousands of other hydropower projects worldwide.

[2] A courtesy copy of which is attached as "Attachment A".

the Graham Lake and Ellsworth dams. Further, DSF's staff and members collectively have decades of experience working to understand, improve, and protect the conservation, scenic, recreational, biodiversity, fisheries and quality of water resources in Maine and the part of the state impacted by this Project.

Background and Litigation History

The delays in this FERC relicensing and WQC have been unconscionable, and as evidenced by MDMR's recent comments,[3] annual fish kills, ongoing dissolved oxygen ("DO") non-compliance, and documented extreme drawdown and turbidity events, have not been without significant negative effects.

Operations of the Applicant's Ellsworth and Graham Lake dams (collectively, "the Project") under a new FERC license were initially proposed by the Applicant on October 24, 2012 in its Notice of Intent to File License Application, and Pre-Application Document for its FERC operating license that would expire on December 31, 2017. Two years later, Brookfield proposed operations under Maine Water Quality Standards in a WQC application filed with DEP in March 2019 (the "2019 WQC Application").[4] As noted above, DSF submitted extensive comments on the 2019 Application. These 2019 Comments are attached in their entirety in part because, due to the decision of the Commissioner to deny the application, MDEP was not required to address in its initial WQC Denial many of the concerns raised, primarily related to: (1) the historical and current presence of the American shad ("shad") and the need for safe, timely and effective volitional fish passage; (2) DO violations that Applicant has not demonstrated are not recurring and (3) other environmental impacts, particularly fisheries impacts, resulting from Applicant's existing and proposed operations. The essence of these 2019 comments was that the operations proposed at that time would "either currently violate or have the potential to violate Maine's applicable water quality standards in at least five ways and cannot be approved by DEP as proposed."[5]

DSF notes, as set forth more fully below, with possible exception of proposing a new flow regime to ostensibly address the drawdown levels at Graham Lake, Brookfield's 2025 Re-application does little to ensure these and other concerns have been adequately addressed, if at all.

Following the submission of DSF's 2019 comments, MDEP issued its denial of the WQC application on March 19, 2020, finding that the proposed operations did not address the ongoing

[3] On August 8, 2025 the Maine Department of Marine Resources ("MDMR") submitted extensive and well-reasoned comments on Brookfield's Re-application referred to hereinafter as the "2025 MDMR Comments". The consequences of delay are discussed in extensively in the context of MDMR's fishway prescription and the need for a five-year time frame to implement fish passage.

[4] Leading up to—and through— the initial WQC process, Black Bear had the opportunity to work with MDEP and propose how it would bring Leonard Lake into compliance with Class B DO requirements. Following expiration of Black Bear's 1987 operating license, Black Bear submitted a WQC Application to DEP on April 9, 2018, before withdrawing that application and submitting a new Application nearly a year later on March 21, 2019.

[5] Attachment A at 1.

water quality violations, particularly Class B DO criteria. The MDEP decision did not address the fisheries and other issues raised by DSF at the time, apparently because it had found sufficient grounds for denial on DO violations and other grounds. Applicant appealed the MDEP decision to the Board of Environmental Protection ("BEP") which rejected Applicant's arguments and affirmed the MDEP denial on June 3rd, 2021. Applicant appealed the BEP decision to the Superior Court which again affirmed the BEP decision and upheld the denial on December 17, 2023. Applicant then appealed to the Law Court who declined to rule on the Class B classification issue (based solely on one of three DO violations) holding that the appeal did not procedurally allow the Court to issue an advisory ruling on the classification issue. That decision, which effectively upheld the WQC Denial, was issued on January 21, 2025, fully over five years from Applicant's original 2019 WQC Application, and over thirteen years from the Applicant's initiation of the relicensing process. Importantly, the Law Court decision did not address the merits of Applicant's WQC denial, upheld by the BEP and Superior Court and only one of the three DO violations that formed in part the basis for denial were appealed by the Applicant to the Law Court. Two ongoing DO violations were not subject to the appeal by the Applicant and were undisputed. There has been no new testing DSF is aware of contradicting these ongoing water quality violations, now occurring over the span of at least five years and no enforcement on the part of any state or federal agency to stop them. The "appeals process," initiated and sustained by the Applicant took more than five years. During this nearly thirteen-year relicensing time period (including the nearly six-year delay caused by Brookfield's appeals) Brookfield has continued to operate the Project on an annual license issued by FERC on the same terms and conditions as the License that expired in December of 2017.

Also, during that time fish kills continued to be observed resulting from adult and juvenile alewives migrating seasonally downstream and becoming entrained by the Project's turbines during the downstream migration due to a lack of safe, timely and effective downstream passage during these seasonal migrations.[6]

There also has been and continues to be a lack of safe, timely and effective upstream and downstream passage for the shad, one of several indigenous species, known to occur historically and be present in the Project Area downstream of the Ellsworth dam. The DEP was made aware of this issue in DSF's 2019 comments and has not acted to require this passage under state and federal case law governing safe, timely and effective fish passage for known indigenous species.

On July 9, 2025, DEP published their Notification of Project Review for Brookfield's Re-Application WQC for the federal relicensing and continued operation of Ellsworth Project. Under prevailing Clean Water Act law, it must (1) deny; (2) approve with conditions; or (3) approve the WQC within a one-year review time frame.

[6] "Numerous incidents of mass fish mortality have occurred at this project, including eight fish kill events between 2014 and 2018 and filings and media reports documenting fish mortality at the project in many years." 2025 MDMR Comments at 3, Notes 7 and 8.

Material Changes Occurring During the Six-Year Appellate Process

As discussed more fully below, in the period of time since former Commissioner Reid denied Brookfield's first attempt at water quality certification, highly relevant new information and/or developments have occurred. These included:

1. The presence of shad continues to be verified in the Project Area, including by Applicant's own data.

2. New data, modeling and performance standards on indigenous species, including shad, have been developed.

3. DEP has issued its upstream 2024 Green Lake WQC, which validated both the historical presence of shad and other indigenous species and the current existence of meaningful amounts of habitat available to support these species were access to this habitat made available through fish passage at the Ellsworth dam.

4. MDMR, in August 2025, has provided MDEP with extensive Comments to the Re-application which provide for a comprehensive five-year indigenous fishway prescription (that includes specific provisions for the shad).

Overview of Comments

The negative impacts resulting from the continued operations under an outdated operating license and the deficiencies in the Re-application have been observed since at least 2019 and are expected to continue under the proposed operations without adequate WQC conditions to ensure: (1) adequate, volitional, upstream and downstream fish passage for shad;[7] (2) compliance with numerical and other narrative water quality standards, specifically ongoing DO violations and (3) other modifications (e.g the installation of a plunge pool) to further mitigate negative environmental impacts. DSF has contended that the fisheries situation on the Union River is closely analogous to that faced by MDEP when it evaluated, issued and then successfully defended at the U.S. Supreme Court its water quality certification for the Presumpscot River dams in 2003, a precedent recently re-affirmed by MDEP in its issuance of a water quality certification on Cobbosseecontee Stream. MDMR also refers to other suitable analogs - existing or planned projects at Milford (Penobscot River), Hydro-Kennebec (Kennebec River), and the planned lift at Woodland Dam (St. Croix River).[8] As such, DSF continues to request that MDEP consistently apply and enforce Maine's water quality criteria -- and the precedents contained in its previous certifications -- to the Union River.

[7] DSF notes the 2025 MDMR's comments address a more comprehensive fish prescription for additional indigenous species including Atlantic Salmon, American Eels, Sea Lamprey, Blue Back Herring, and Alewives. MDMR mentions the threatened Atlantic Sturgeon but does not include provisions or performance standards in its proposed fishway prescriptions. *See* 2025 MDMR comments at 1 "All indigenous diadromous fish species are likely present below the Ellsworth dam including threatened Atlantic sturgeon.

[8] *See* 2025 MDMR Comments at 13.

The Re-application contains primarily two new proposals from the Applicant – one intended to address the Graham Lake drawdown water levels, and a second that appears intended to address compliance with Class B DO numeric standard. The Application is silent as to fish passage for shad and other indigenous species known to exist in the Project area, apparently deferring to federal agency fishway prescriptions *which does not address safe, timely and effective upstream and downstream fishways to accommodate shad*. Thus, even if it could be argued that the *other* indigenous species MDMR discusses in its 2025 Comments are adequately addressed by the NOAA/USFW fishway prescription or in FERC's July, 2019 final EA, the omission of *any* federal analysis or provision for shad means that under the federal fishway prescription and the final EA, there is simply no accommodation for this known, specific indigenous species. Accordingly. DSF's comments and recommendations are focused on the following:

1. **The continuing need for immediate volitional upstream and downstream fish passage that will accommodate the shad.**

2. **Other WQC conditions that ensure (a) the attainment of Class B DO standards upstream of Ellsworth Dam; (b) continuous compliance with Applicant's proposed Graham Lake water level regime; and (c) other conditions and structural modifications recommended by DSF and MDMR.**

In light of the delays that have occurred, DSF is recommending that MDEP approve the WQC **with conditions** consistent with the above and MDMR's fishway prescriptions and recommendations – conditions that will ensure compliance with Maine's water quality standards

I. DEP MUST REQUIRE IMMEDIATE UPSTREAM AND DOWNSTREAM VOLITIONAL FISH PASSAGE FOR SHAD.

Re-Application Proposal: Nothing addresses safe, timely and effective passage of indigenous shad. Applicant is proposing to follow the federal fishway prescription which has no accommodation for safe, timely and effective upstream and downstream volitional passage for the shad. Simply stated, the Applicant has not proposed in its Re-application that, upon certification and issuance of its FERC license, it will immediately or even timely install permanent volitional upstream and downstream passage for indigenous shad.

DSF Response:

1. DSF's 2019 Comments: DSF's 2019 set forth an extensive, and undisputed basis for the historical presence and importance of the shad to the Union River watershed.[9] Their continued presence in the waters downstream of the Ellsworth Dam was demonstrated at the time of that filing with undisputed by-catch trawl data indicating the presence of shad in the waters downstream of the Ellsworth Dam.[10] This in part formed the basis for DSF's assertion that

[9] *See* Attachment A at 20-25.

[10] *See* Attachment A at pp 26-29 and "Exhibit E." DSF notes that shad are routinely seen along the coast and have strong populations in neighboring rivers on each side of the Union, the Narraguagus and Penobscot rivers.

immediate upstream and downstream volitional fish passage for shad is required by state law. DSF specifically contended that MDEP must require immediate installation of permanent upstream shad passage at the Ellsworth Dam, to be followed in a phased, triggered manner by permanent upstream passage at the Graham Lake Dam if shad populations reach a certain count.[11] Specifically DSF contended that:

> 1. There exists sufficient, documented proof that shad are indigenous to the upstream reaches of the Union River.
>
> 2. There is federal, state and Applicant consensus that a "remnant" shad population exists downstream of the Ellsworth Dam in the mouth of the Union River, combined with DMR data showing shad in the migratory region of this species just downstream of the river.
>
> 3. Recent, ambitious restoration goals for shad on the Union River have been established on more than one occasion by state and federal natural resource agencies and acknowledged by the Applicant, further confirming both the historical existence of shad and the importance of restoring their population above the Ellsworth dam.
>
> 4. The fact that these Union River shad restoration goals cannot possibly be met without safe, timely and effective upstream and downstream volitional passage designed specifically for shad, due to the admitted failure of the current upstream fish passage trap-and-truck mechanism to either effectively attract or capture shad, and the absence of any meaningful amount of shad spawning habitat downstream of the Ellsworth Dam.[12]

2. Recent studies and data performed by DSF and MDMR confirm the continued presence of a remnant shad population in the Project Area: The four elements listed above still apply today, and in fact have been validated and confirmed by recent studies and data. Recently completed eDNA sampling by DSF conducted in 2024 conclusive shows the presence of shad in the Project area. This sampling method, familiar to MDEP, can only confirm the presence, not the quantity or the specific number of the depleted residual population that exists today.

Specifically, DSF conducted eDNA sampling to determine if shad were present in the Union River immediately below the Ellsworth Dam in spring of 2024. Water samples were taken in proximity to the US Rt 1 bridge and at a second location immediately below Ellsworth Dam.

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[11] As stated in DSF's 2019 Comments "Given both the history of this indigenous species in the Union and governmental fisheries management goals to restore shad -- the documentation of which spans three centuries – and given that all legally-necessary elements mandating fish passage as established by DEP's own legal precedent are established and in place, this immediate installation is not optional." Attachment A at 19.

[12] Attachment A at 19-20. DSF notes that the shad, as distinguished from other indigenous species have different migratory swimming behavior – they do not "school" as alewives or salmon do, and thus a singular trap and truck location is unlikely to capture them in any numbers. Similarly, this unique behavior in part explains why fish passage for them must be designed to accommodate shad movement to attract then to upstream and downstream volitional passage. *See also* Attachment A at 43.

Samples were secured utilizing standard protocols supplied by the two laboratories where the samples were later analyzed. The Union River Bridge sample (6/28/2024), and the Union River Dam sample (7/10/2024) returned positive eDNA results indicating that DNA from shad had been identified in river water collected at these locations. The first result was generated by the eDNA laboratory at UMaine Orono with the second generated by the Jonah Ventures laboratory in Golden, Colorado.

These data provide conclusive evidence that this species continues to be present and persistent in this watershed in 2024 and have been validated by the Applicant's own 2024 Historic Trap Counts attached as Exhibit 1. Although the numbers are relatively small, the residual population of shad, discussed in DSF's 2019 Comments, continue to be present and could migrate to upstream habitat provided the appropriate volitional passage was present at the Ellsworth and Graham Lake dams.

3. MDEP itself had recently concluded that meaningful habitat for shad and other indigenous sea-run species exists upstream and downstream of the Project Area:

The 2024 Green Lake WQC: On May 9, 2024 MDEP issued its WQC with conditions for Green Lake Water Power Company's Green Lake Hydroelectric Project (MDEP project #l-020024-33-d-n) located in Hancock County in the Union River water shed upstream of the Ellsworth Project (the "Green Lake WQC").

MDEP made several notable findings in the Green Lake WQC. Among them is that critical upstream habitat exits in the watershed for shad. MDEP stated:

> All of Maine's native diadromous species are found in the Union River Basin. Reeds Brook is designated as critical habitat for the federally endangered Atlantic salmon. Although anadromous species are not currently able to migrate upstream past the Ellsworth and Graham Lake dams, Green Lake and Reeds Brook are understood to be historic habitat for Atlantic salmon, alewife, blueback herring, **shad**, American eel, and sea lamprey, based on the lack of natural barriers downstream of Green Lake.[13] (emphasis added)

This finding confirms DSF's 2019 assertions that critical historical habitat exists well upstream of the Graham Lake and Ellsworth Dams and would be accessible to shad if volitional fish passage were available at both dams.

4. Recent Population and Habitat area calculations support the existence of shad and habitat in the Project Area: The estimates made by MDMR in its 2025 Comments[14] continue to form a legitimate and well-reasoned basis sufficient for the purpose of estimating

[13] Green Lake WQC at 21-22.

[14] *See* 2025 MDMR comments at 8-9 (discussing shad performance standards); at 13-19 (rationale and justification for upstream downstream passage); at 28 Appendix 2 "Tables of alosine habitat in the Union River Watershed"; and at 29 Appendix 3 "Migratory periods for Diadromous Species in the Union River".

population and habitat within and proximal to the Project area.[15] It is also noteworthy that this level of analysis has been accepted historically as an initial estimation basis in the analog projects mentioned at the outset.

5. MDEP continues to have both the independent legal authority and the legal obligation to require fish passage. In DSF's previous comments, it set forth in detail MDEP's authority and obligation, required by Maine's water quality laws, to require volitional fish passage to meet the directives of state water quality law and to be consistent with its past practices and the wholly consistent precedents DEP has established in similar situations, as discussed above. MDEP must now exercise this the authority to order installation of upstream and downstream passage for indigenous species as part of its water quality certification above and beyond whatever federal prescription might exist (and for shad there is none).[16] This is well settled and applicable law and the Applicant has not, as yet, challenged it.

6. DSF's 2019 Comments included an Extensive and Detailed Discussion of Volitional Fish Passage for shad including a detailed phased approach for Ellsworth and Graham Lake. Given the legal requirement for the installation of volitional passage for shad, there are only a limited number of discretionary issues for MDEP in determine: the specific timing of when such passage should be implemented, what type of physical passage will meet restoration performance standards, and finally, how best to ensure post installation restoration goals are met.

Regarding the timing of passage implementation, "Agency decisions (beginning with the Presumpscot certifications in 2003) have granted delays to dam owners in constructing fish passage for indigenous species at dams that lack such passage if a *rational, fisheries-based reason existed for granting a delay*."[17] (emphasis supplied). Here there continues to be no rational, fisheries-based reason to delaying implementation of volitional passage, and Applicant has not offered any justification for further delay. The federal NOAA/USFW prescription, which is not a relevant factor to consider since it does not address shad fish passage, is spread out over a fifteen-year period of time from the time of license issuance. This means a delay of twenty-four years assuming the license can be issued in 2026 (fully nine years after the expiry of the 2017 FERC license in addition to the 15-year implementation period). This is unacceptable on many levels, not the least of which, as MDMR points out in its 2025 comments, is that further delay is causing additional fisheries harm.[18]

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[15] DSF notes there are alternative methods of calculating these estimates for shad but is not aware of any such calculations or estimates made by the Applicant. Presently, DSF defers to MDMR's justifications.
[16] *See* Attachment A at pp 35-36 and Notes 74 – 76. *See also PUD No. 1 of Jefferson Cnty. v. Wash. Dep't of Ecology*, 511 U.S. 700, 713–15 (1994) (holding that, in water quality certification process for hydroelectric project, states may safeguard suitable fish spawning, rearing, and migration habitat).
[17] Attachment A at 36.
[18] *See e. g.* 2025 MDMR Comments at 4 "MDMR does not consider it appropriate or scientifically defensible to delay construction of volitional upstream fish passage at the Ellsworth Project until year 15 of the new license as proposed, with fishways just focused on Atlantic salmon as the target species." and at 22, "Minimizing passage delay is equally important. Delays at dams can lead to increased energy expenditure, stress, and ultimately reduced reproductive success. Keefer et al. (2004) demonstrated that most Chinook salmon and steelhead successfully passed Columbia River dams within 48 hours. However,

DSF went further in its 2019 Comments and offered various rationales and DSF responses to these issues that might be offered to form such a rational fisheries-based reason to delay passage (acknowledging the federal prescription with other designated indigenous species) and could find none that would justify any such delay for the shad.[19]

Simply stated, although MDEP has the discretion to determine the timing of when fish passage for indigenous sea-run shad must occur, there is no rational basis, nor has any been offered, for departing from past MDEP precedents and not ordering the Applicant to immediately design, install and then operate upstream passage for shad at the Ellsworth Dam. DSF's proposal involves a phased (based on a counter), and measured approach to ensure minimal fish passage requirements are met in a timely way. MDEP has no choice for passage of the shad at the Union: it is indigenous (uncontested), it is present (uncontested), the federal prescriptions do not address it (uncontested) and there is no evidence whatsoever that the federal fish passage prescription is or will be effective for achieving safe, timely and effective upstream and downstream volitional passage for shad. MDEP, by state water quality laws and precedent, must exercise its fish passage authority and require upstream and downstream volitional fish passage for the shad at the Ellsworth and Graham Lake Dams.

6. MDMR 2025 Comments Validate DSF's Earlier Assessments and Need for Safe, Timely and Effective Passage. MDMR's approach regarding indigenous species in the Union River watershed is to be commended for being more comprehensive and similarly justified as to its timing, a five-year implementation window for all known indigenous species. DSF fully supports the findings, justifications, timing, performance standards, minimum species goals and recommendations set forth in detail in their comments. DSF notes in particular the following findings and statements:

Minimum Species Goals – shad: "The minimum goal for shad is to provide safe, timely, and effective upstream and downstream passage in order to achieve a minimum annual return of 82 adult shad per acre of habitat. This would equate to at least 60,598 shad passing the Ellsworth project and at least 54,530 passing into Graham Lake."[20]

Shad Performance Standard: Achieve an upstream passage performance standard of 77% within 48 hours for shad and downstream performance standard of at least 95% within 24 hours for shad at each dam.[21]

Upstream Anadromous Fish Passage: "Design, construct, operate, and maintain new upstream anadromous fish passage facilities at the Ellsworth and Graham Lake Dams. Upstream fishways shall meet or exceed USFWS design criteria (2019 or current version), and shall be

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recent modeling by Rubenstein et al. (2022) showed that delayed passage across four dams on the Kennebec River could reduce reproductive success for Atlantic salmon to just 30.7 percent. These findings highlight the biological cost of delays and the importance of rapid and efficient fishway performance." (internal citations omitted).

[19] Attachment A at 38-42.

[20] 2025 MDMR Comments at 6.

[21] Id. at 8.

designed to pass at least 932 Atlantic salmon, 357,676 blueback herring, and **82,029 shad**…. Given the Union River's comparable habitat potential, the Ellsworth Project must include fish passage facilities of equal or greater capacity to ensure timely, volitional, and effective passage for expected future runs of river herring, shad, and other diadromous species….."[22]

Timing: "Final fishway **designs** shall be complete and approved **within 2 years of license issuance at each project. New fishways and passage infrastructure shall be constructed and operational prior to the 5th upstream passage season after license issuance. Interim fish passage shall be provided throughout the first 4 passage seasons through either the existing fishway or interim fish passage developed by Brookfield**.[23] …. While the **existing requirements** include the development of a state of the art swim-through fishway **no later than year 15** of any new license, **this timeline has no biological basis and the continuous impacts are too significant for this amount of delay, particularly given the delays since expected relicensing**."[24] (bold emphasis supplied).

Downstream Fish Passage: "Brookfield will design, construct, operate, and maintain a 0.75-inch or less, full depth, angled or inclined rack structure upstream of the forebay, new surface bypass systems at the Ellsworth Dam and low level (multiple entrances) bypass systems at the Ellsworth and Graham Lake dams within five years of license."[25] (for eels and alosines).

DSF is similarly supportive of the proposed recommendations regarding an Adaptative Management Plan,[26] Upstream Eel Passage & Adaptive Management,[27] Fish Passage Counts and Fishway Operations and Maintenance Plan,[28] Plunge Pool Evaluation and Design[29] and Process Installation.[30]

In sum, the data, analysis, justifications and recommendations in the MDMR 2025 Comments are aligned with nearly all of the fisheries issues set forth and DEF's 2019 Comments and DSF fully supports their inclusion into the WQC as fish passage conditions, particularly for the shad.

Additionally, the seasonal operational restrictions proposed by MDMR are designed in such a manner to mitigate the seasonal fish mortality that has been repeated observed due to the entrainment of fish and eels migrating downstream through the Ellsworth Dam. These restrictions would also seem to be necessary conditions to ensure that Applicant's proposed operations do not perpetuate the annual observed migratory fish kills.

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[22] Id at 13.
[23] Id.
[24] Id. at 15.
[25] Id.
[26] Id at 19-23.
[27] Id at 23-25.
[28] Id. at 25.
[29] DSF discussed the need for a plunge pool in its earlier comments (*see* Attachment A at 46-47).
[30] Id at 27.

II. DEP MUST REQUIRE CONDITIONS TO STOP ONGOING DO VIOLATIONS AND ENSURE FUTURE COMPLAINCE

Re-application Proposal: The Re-Application approaches this issue with a question and a contingency: "***If*** MDEP continues to consider Lake Leonard as Class B waters and not Class GPA, Black Bear is proposing to implement a water quality enhancement program for Lake Leonard, which will be developed in consultation with the MDEP and include the installation, operation, and maintenance of an oxygen injection, or comparable, system to enhance dissolved oxygen (DO) concentrations within the impoundment."[31] (emphasis supplied).

DSF Response: Since, as earlier stated in the litigation history above, nothing in the appeals process that the Applicant pursued disturbed the MDEP denial, or the BEP or Superior Court's holdings upholding the WQC denial on DO violations, DSF is confused by the conditional nature of the Applicant's proposal. DSF is unaware that either the Applicant or MDEP has pursued further litigation to obtain an advisory opinion from the Law Court or that MDEP has changed its position in any way that Leonard Lake is a Class B waterway.

DSF notes in its 2019 Comments that by the time that Brookfield filed its amended WQC Application with MDEP on March 21, 2019, water quality testing conducted by Brookfield — starting six years earlier—showed its two dams were causing the failure of not only the Leonard Lake impoundment, but also Graham Lake and the free-flowing downstream Union River to meet statutory water quality requirements. These ongoing water quality violations, based on Brookfield's own testing, provided the basis for the MDEP Commissioner to deny its 2019 WQC Application on three separate grounds. *And critically, DSF is unaware of any information in the Re-Application that proves that Leonard Lake is meeting Class B requirements.*

Further, while the appeals process played out, the waters of the Union River and the aquatic life that rely on it—including threatened and endangered species—have continued to suffer harm due to ongoing water quality violations and the resulting inability of FERC to issue a new federal license for the Project—a license for which DSF is aware that FERC staff have stated their desire to implement extensive new terms and conditions to address, among other things, the lack of safe, timely, and effective fish passage at the Project.

In the meantime, recommended fish passage licensing conditions continue to be held in abeyance and, based on all publicly available data, the waters of the Union River continue to violate Maine's Water Quality laws. The status quo is not sustainable under Maine law and Applicant's vague and conditional aeration proposal, without any conditions to ensure water quality standards will be met is unacceptable.

DSF's Recommended Conditions: Brookfield has been operating the Project in violation of Maine Water Quality Standards for several years now. Accordingly, DSF responds with the following recommendations:

[31] Re-application at Exhibit E, 3.3.4 "Proposed Environmental Measures" 3.3.4 - "New Proposed Environmental Measures" paragraph 2.

1. Applicant must immediately implement and install a suitable aeration system[32] in Leonard Lake, approved by MDEP and demonstrated to bring the Project into compliance with Maine Water Quality standards, including Class B DO standards.

2. To ensure that the operations continue to attain compliance with Class B standards, Applicant must also develop a DO Compliance Plan ("DOCP") within one year of license issuance in consultation with MDEP and file it with the Commission for approval. The DOCP will describe the methods Applicant will employ to ensure dissolved oxygen levels in Leonard Lake, immediately upstream of Ellsworth Dam comply with Maine State Water Quality Numeric DO Standards for Class B waters.

3. During high temperature, low dissolved oxygen periods in the summer, Applicant must implement some additional method - e.g. additional direct injection or turbine venting, to maintain DO compliance levels if the aeration system alone cannot.

4. The methods used by Applicant to meet the dissolved oxygen standard in Leonard Lake will apply best management practices that will not increase water temperatures beyond the ambient water temperature from Graham Lake inflow or in reach immediately below Ellsworth Dam to prevent triggering water quality antidegradation issues.

5. If air or oxygen injections are used to meet Water Quality Standards, compressed air or oxygen will be used, not ambient air for injections since ambient air temperatures in the summer can be much higher than the water temperature.

III. DEP MUST REQUIRE CONDITIONS TO ENSURE THAT APPLICANT'S UPSTREAM DRAWDOWNS ARE NOT EASILY CIRCUMVENTED

Re-application Proposal:

Impoundment Levels: "Target water levels in Graham Lake will be maintained within an operational buffer between the elevations of 100.1 feet msl and 103.0 feet msl (See "Proposed Graham Lake Operating Curve" provided below); however, Graham Lake may be drawn below 100.1 feet msl during periods when inflow is less than the required minimum flow…..These

[32] There are known engineering options that may allow Black Bear to successfully operate the Project *and* comply with Maine's water quality laws, including installation of a "deep gate" in the Ellsworth Dam spillway to allow the discharge of poorly oxygenated water in the impoundment during the summer months, or installing of an "in-stream aerator" or oxygen injection system (as Applicant appears to propose) to add DO to the portions of the impoundment waters that are poorly oxygenated. Furthermore, if Black Bear concludes it is simply not possible to operate the Project and achieve compliance with Class B DO requirements, both state and federal law contemplate such a possibility and provide a remedy that will allow the Project to continue. Black Bear can pursue the legal process known as "use attainability analysis." This process, established by the Legislature and the Clean Water Act, enable Black Bear to request that the Legislature "downgrade" the classification of Leonard Lake after Black Bear conducts a BEP-supervised use attainability analysis and demonstrates that attainment of Class B is not possible. *See* 38 M.R.S.A. § 464(2), (2-A). To DSF's knowledge there have been no discussions or proposals in this regard.

requirements may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon agreement among the Licensee, the Maine Department of Environmental Protection (MDEP), the Maine Department of Marine Resources (MDMR), the National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS).[33]

Minimum Flows: "Except as temporarily modified by (1) approved maintenance activities, (2) extreme hydrological conditions, (3) emergency electrical system conditions, or (4) agreement between the Licensee, MDEP, MDMR, NMFS, and USFWS…."[34]

DSF Response and Recommended Condition: In addition to the stated conditions under which temporary modifications may occur to Impoundment levels and minimum flows, DSF suggests the following conditions:

1. Applicant shall convene an annual meeting with, at a minimum, the Maine Department of Inland Fisheries and Wildlife ("MDIFW"), MDEP, United States Fish and Wildlife Service ("USFWS"), and interested persons no later than the first of April to review its reservoir refill strategy taking into consideration its winter reservoir drawdown regime, long-range spring and summer precipitation predictions; with consideration of how its water management plan will meet the late spring refill requirement of reaching the proposed minimum flow regime or higher and be protective of upstream and downstream Union River watershed environmental resources including a stabilized lake level for Graham Lake.

DSF notes that the Applicant has proposed a hydrograph that appears to mitigate the extreme drawdowns and turbidity events that have been historically witnessed and affect most prominently Graham Lake water levels and downstream water quality. Ultimately, DSF acknowledges that the stakeholders most affected by the proposed flow regime must also weigh in to ensure their interests are heard and addressed and have the opportunity to do so on an annual basis.

Further, the minimum flow regime may require some modification as upstream and downstream fish passage is implemented to ensure stable minimum flow for fisheries, especially during migratory periods. These future modifications may affect a broad range of stakeholders and their participation annually is both warranted and necessary.

CONCLUSION.

It has been more than 20 years since the Legislature completed its update of Maine's Water Quality Laws as it affects this Re-application. It has been 38 years since the Project was last reviewed by a previous DEP Commissioner for compliance with Maine's water quality standards. Currently, the Project is the only significant industrial or municipal discharger into the Union River that has not been brought into compliance with modern Maine water quality laws. If there is any chance of rebuilding the Union River ecosystem during the 30 - 50 year term of the next federal

[33]Re-application at Exhibit E at 3.3.3.
[34] Id.

license, the Project's operations must be brought into compliance with Maine law. This means specifically:

(1) Absent a rational basis for further delay, upstream and downstream volitional passage for indigenous shad is required immediately or at least consistent with the 2025 MDMR five-year fishway design and implementation scheduled prescription recommendations.

(2) Absent any assurances of future compliance with numerical DO and macroinvertebrates, that MDEP require conditions to ensure that aeration measures demonstrate periodically the attainment of Class B DO standards in Leonard Lake.

(3) In the event MDEP issues a certification with terms and conditions that can ensure these existing water quality violations are corrected, that these terms and conditions also include (i) at a minimum annual muti-agency and stakeholder involvement in the event Brookfield deviates from its proposed water drawdown range for Graham Lake; (ii) the installation of a plunge pool at the base of Ellsworth Dam; and (iii) consistent effectiveness measures and testing to provide reasonable assurances of future compliance.

Respectfully submitted by the undersigned this 15th day of September 2025.

By:_____

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By:_____

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cc
Sean Ledwin MDMR,
Scott Boak AG's Office
Randy Dorman, Brookfield

EXHIBIT 1

Historical Trap Counts

These data are compiled by the Department of Marine Resources (MDMR) using fishway counts provided by agencies and power companies. "NC" indicates a species is not counted at that location. Fish returns should be considered as provisional. Please direct any questions to the organization responsible for the count.

River		Atlantic Salmon	American Shad	River Herring
Androscoggin River	Brunswick Dam			
	2014	3	0	55,678
	2015	1	53	71,887
	2016	6	1,096	114,874
	2017	0	1	49,923
	2018	1	32	179,040
	2019	1	63	81,025
	2020	5	23	67
	2021	5	550	54,906
	2022	17	228	139,326
	2023	8	14	67,927
	2024	17	91	112,563
Aroostock River	Tinker Dam			
	2014	1	NC	NC
	2015	6	NC	NC
	2016	7	NC	NC
	2017	3	NC	NC
	2018	39	NC	NC
	2019	9	NC	NC
	2020	3	NC	NC
	2021	1	NC	NC
	2022	0	NC	NC
	2023	0	NC	NC
	2024	1	NC	NC
Kennebec River	Lockwood Dam			
	2014	18	1	115,649
	2015	31	26	88,728
	2016	39	836	224,990
	2017	40	213	289,188
	2018	11	437	307,035
	2019	56	44	240,594
	2020	51	180	143,259
	2021	23	92	65,007
	2022	82	5	83,978
	2023	159	1	137,752
	2024	51	23	86,467
Kennebec River	Benton Falls Dam			
	2014	0	26	2,378,906
	2015	0	47	2,158,769

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	2016	0	18	3,128,753
	2017	0	65	3,547,091
	2018	0	26	5,579,901
	2019	0	114	3,287,702
	2020	0	10	2,847,171
	2021	0	7	3,552,813
	2022	5	9	2,803,248
	2023	3	2	4,154,124
	2024	2	5	6,551,622
Narraguagus River	Cherryfield Dam			
	2014	25	82	NC
	2015	27	60	NC
	2016	9	459	NC
	2017	36	843	NC
	2018	42	608	NC
	2019	72	621	NC
	2020	108	790	NC
	2021	21	529	NC
	2022	19	478	NC
	2023	6	302	NC
	2024	5	557	NC
Penobscot River	Milford Dam			
	2015	729	1,806	589,645
	2016	501	8,223	1,262,117
	2017	840	4,008	1,258,726
	2018	757	4,113	2,175,687
	2019	1,152	2,522	1,987,056
	2020	1,414	11,361	1,952,931
	2021	553	11,674	1,732,034
	2022	1,310	7,732	2,852,570
	2023	1,557	4,376	5,490,383
	2024	1,378	10,776	5,476,107
Penobscot River	Orono Dam			
	2015	6	1	19,346
	2016	6	6	78,707
	2017	9	0	90,483
	2018	15	8	136,932
	2019	44	9	163,239
	2020	26	2	111,518
	2021	8	2	201,565
	2022	14	2	230,738
	2023	13	2	232,045
	2024	20	2	222,083
Saco River	Cataract Dam			
	2014	3	2,580	11,576
	2015	5	6,171	19

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	2016	2	16,435	22,644
	2017	8	3,584	45,003
	2018	3	4,107	88,654
	2019	1	1,139	55,028
	2020	3	5,353	34,246
	2021	0	2,583	134,654
	2022	4	1,093	174,595
	2023	1	1,176	1,263
	2024	0	NC	NC
Saco River	Skelton Dam			
	2014	3	33	3,728
	2015	1	32	25,456
	2016	0	209	14,743
	2017	1	12	5,121
	2018	0	93	44,424
	2019	4	32	2,342
	2020	4	48	33,999
	2021	0	133	116,753
	2022	2	22	149,130
	2023	4	41	2,202
	2024	1	79	48,590
St. Croix River	Milltown Dam			
	2014	0	0	27,312
	2015	0	0	93,503
	2016	0	0	33,016
	2017	0	0	157,750
	2018	0	0	270,659
	2019	0	29	486,500
	2020	0	26	611,907
	2021	0	40	550,123
	2022	0	17	712,878
	2023	0	675	841,357
St. Croix River	Woodland Dam			
	2024	0	0	610,452
Union River	Ellsworth Dam			
	2014	2	0	153,360
	2015	0	0	329,160
	2016	0	1	336,220
	2017	0	0	327690
	2018	0	0	278675
	2019	2	0	320320
	2020	3	0	301,860
	2021	0	2	313,136
	2022	0	2	321,251
	2023	0	1	324,675

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	2024	0	0	326,025

Androscoggin	Brunswick	Counts conducted by DMR and Brookfield Renewable Energy Group.
Aroostook	Tinker Dam	Counts provided by Algonquin Power.
Kennebec	Benton Falls	Counts conducted by MDMR.
Kennebec	Lockwood Dam	Counts provided by Brookfield Renewable Energy Group.
Narraguagus	Cherryfield	Counts provided by MDMR. River herring and small bodied(<40 cm in total
Penobscot	Milford fish lift	Counts provided by MDMR
Penobscot	Orono	Counts provided by Brookfield Renewable Energy Group.
Penobscot	Weldon Dam	Counts provided by Brookfield Renewable Energy Group. River herring were
Saco	Cataract (East + West Channels)	Counts provided by Brookfield Renewable Energy Group.
Saco	Skelton	Counts provided by Brookfield Renewable Energy Group.
St. Croix	Milltown Dam	Counts provided by St. Croix International Waterway Commission.
St. Croix	Woodland Dam	Counts provided by St. Croix International Waterway Commission.
Union	Ellsworth	Counts provided by Brookfield Renewable Energy Group.

DOWNEAST SALMON FEDERATION

November 6, 2019

VIA REGULAR AND ELECTRONIC MAIL

Ms. Kathy Davis Howatt
Hydropower Coordinator
Bureau of Land Resources
17 State House Station,
Augusta, Maine 04333-00017

RE: Comments on Brookfield Renewable Energy Group, Black Bear Hydro Partners LLC's, *DEP Application #L-13256-33-J-N, Ellsworth Hydroelectric Project*, Application for §401 State Water Quality Certification, (FERC Docket P-2727).

Dear Ms. Howatt:

On behalf of the Downeast Salmon Federation ("DSF"), please accept these comments for inclusion into the record for the Maine Department of Environmental Protection's ("DEP") review of the application of Black Bear Hydro Partners, LLC ("Applicant") to receive a water quality certification for its Union River hydropower project. DSF has a direct interest in this certification process. The issuance of a Water Quality Certificate, as part of the FERC re-licensing for this project, will directly affect each of our member's aesthetic and recreational use of the Union river, and our interest in restoring the fisheries and enhancing the biodiversity of the river. Further, DSF's staff and members collectively have decades of experience working to understand, improve, and protect the conservation, scenic, recreational, biodiversity, fisheries and quality of water resources in Maine and the part of the state impacted by this project in particular.

Overview of Comments

Operations of the Applicant's Ellsworth and Graham Lake dams (collectively, "the Project") as proposed by the Applicant in its water quality certification application filed with DEP in March 2019 (the "Application") either currently violate or have the potential to violate Maine's applicable water quality standards in at least five ways, and cannot be approved by DEP as proposed. The adverse and ongoing individual and cumulative water quality impacts from the current operations of the Ellsworth and Graham Lake Dams on aquatic species and poor water quality have already been dramatically witnessed, are ongoing, and the Applicant has not demonstrated that the changes in operation proposed in its Application will bring the project into compliance with state water quality laws. These adverse impacts include without limitation:

(1) operational water drawdown levels at the Graham Lake Dam resulting in visibly exposed Graham Lake lakebed, shore flooding and increased turbidity;

(2) Applicant-documented violations of the Class B numeric criteria for dissolved oxygen;

(3) Applicant-documented violations of the Class B aquatic life designated use, due to the failure of the macroinvertebrate community to meet established DEP requirements;

(4) the absence of legally required upstream volitional passage for American shad, an indigenous species known to be present in the Union River; and

(5) the failure of the waters immediately below the Ellsworth Dam to achieve the designated use of habitat for fish and other aquatic life, as well as the causing of adverse impact to aquatic life due to: (a) the absence of a plunge pool at the base of the Ellsworth Dam. The absence of a plunge pool has caused and will continue to cause the death of diadromous fish forced to migrate downriver over the spillway at Ellsworth during certain Applicant operations including newly-proposed turbine shutdowns, resulting in increased mortality from fish striking the rocky shoals at the base of the dam; and (b) a similar designated use failure in the waters immediately upstream of the Ellsworth Dam, due to the absence of a "deep gate" at the upstream base of the dam allowing downstream-migrating American eel to avoid having to pass through the Applicant's turbines, suffering increased mortality from turbine entrainment.

Each of these impacts have been observed and is expected to continue under the proposed Application. DSF contends that the fisheries situation on the Union River is closely analogous to that faced by DEP when it evaluated, issued and then defended to the U.S. Supreme Court its water quality certification for the Presumpscot River dams in 2003, a precedent recently re-affirmed by DEP in its issuance of a water quality certification on Cobbosseecontee Stream. As such, DSF requests that DEP consistently apply and enforce Maine's water quality criteria -- and the precedents contained in its previous certifications -- to the Union River.

I. DEP MUST REJECT APPLICANT'S PROPOSED 5.7 FOOT GRAHAM LAKE WATER DRAW DOWN RANGE IN FAVOR OF FERC'S RECOMMENDED WATER DRAWDOWN LIMIT RANGE OF 4.5 FEET BECAUSE THERE IS NO DATA THAT SUPPORTS APPLICANT'S PROPOSED RANGE AND APPLICANT HAS DELAYED ITS SUBMISSION OF NEW DATA.

As an initial but significant matter, DSF is aware that Applicant supplied DEP with no new data in its Application to justify a Graham Lake operational water drawdown level of 5.7 feet msl as opposed to the water draw down level of 4.5 feet msl recommended by the Federal Energy Regulatory Commission ("FERC"). DSF is also aware that Applicant intends to provide FERC with supplemental "flooding and operational data" in early January of 2020, a little less than 90 days before a DEP agency decision is anticipated to be issued in this matter. The timing of the provision of this data is problematic on several levels, not the least of which is the severe disadvantage DEP, DSF and the public are put in regarding their ability to receive and analyze the data in connection with the timing of this certification.

A. FERC has rejected Applicant's proposed 5.7 water drawdown range in favor of a 4.5 foot range.

In its initial application ("FERC Application") to FERC for a new license to continue to operate and maintain the Ellsworth HydroElectric Dam ("Ellsworth Dam"), Applicant proposed to "operate Graham Lake between the elevations of 93.4 and 104.2 feet" and submitted a request for a 10.7 water drawdown range.[1] On March, 2019 Applicant then filed its new application with DEP, significantly changing its Application and proposing to operate Graham Lake between 98.5 and 104.2 feet msl, a 5.7 water drawdown range. FERC used the 5.7 range in its Final Environmental Assessment ("FEA").[2] Applicant also proposed to temporarily modify the elevations at Graham Lake and Leonard Lake during: "(1) approved maintenance activities; (2) extreme hydrologic conditions; (3) emergency electrical system conditions; or (4) agreement among Applicant, DEP and appropriate state and/or federal fisheries management agencies as was required in its 1987 License."[3] At the time this proposal was submitted DSF did not have the data to be able to recommend a specific water drawdown levels.

In its FEA, FERC noted that "Graham Lake is one of the most turbid impoundments in Maine"[4] and that such turbidity and suspended sediment can "potentially affect all trophic levels of ecosystems as well as other, numerous adverse affects and that extreme drawdowns or flooding in the impoundment could result in exposed lake bed or erosion at maximum elevations with shoreline sediment being put into suspension.[5] DSF monitored and documented an unexplained major turbidity event earlier this year (on April 17, 2019) wherein the turbidity was so extreme as to be visible from the air.[6] This event is believed to have been attributed to prior extreme water drawdown elevations at both severe drawdown and peak flooding caused by Applicant's peaking operations.

In anticipation of these effects, or because of them, FERC rejected Applicant's proposed 5.7 foot drawdown range, in part out of concerns for the protection of aquatic species in the littoral zone and in part to avoid major turbidity events that the impoundments have experienced.[7] FERC specifically addressed flood control concerns raised by the Applicant in its proposal stating:

> Although the project is primarily operated as a peaking generation facility, [Applicant] also manages water levels at Graham Lake during flood conditions to minimize the risk of flooding downstream of the project. *Historically, no complaints or concerns have been filed on the project record to indicate that flooding issues have occurred either upstream or downstream of the project, including during periods of high inflow and spillage from the Ellsworth Dam.*[8]

[1] *See* FEA at 105-107 citing Black Bear Hydro's December 15, 2015 Final License Application.
[2] FEA at 22 (note note 17) and 86.
[3] FEA at 86 citing *Bangor Hydro-Electric Company*, 41 FERC ¶ 62,304 (1987).
[4] FEA at 89-94.
[5] Id.
[6] *See* Exhibit A.
[7] FEA at 335.
[8] FEA at 106, citing Applicant's December 30, 2015 Final License Application, Exhibit B at B-3.

Exhibit A: Aerial Photograph taken on April 17, 2019 depicting visible turbidity event, location is near the Branch Lake Stream dam (visible at left and now removed) outlet into Leonard Lake (discolored water on right).

As a result of extensive analysis, FERC's FEA rejected the Applicant's proposal and instead recommended that the Applicant be required to operate "Graham Lake between the elevations of 98.5 and 102.3 feet msl to reduce project effects on recreation, erosion, and littoral habitat for aquatic organisms."[9] DSF is reasonably comfortable with the 4.5 range, believing that the range would prevent either too much or too little water in the Graham Lake impoundment and that if the narrow range is adhered to it may actually help re-establish vegetation on the lake bed over time that would serve to reduce turbidity. DSF believes this would not be the case under Applicant's proposed 5.7 water draw down range.

B. Applicant has recently requested an extension from FERC and indicated that it will submit new data on flooding and operational safety on January 20, 2020.

In its January 21, 2019 comments to FERC on FERC's draft Environmental Assessment, the Applicant asserted that the 4.5 foot drawdown range proposed by FERC in the draft EA "may cause additional flooding above that which is currently experienced."[10] In this filing, the Applicant did not include any modeling or other technical information to support its claim.

Due to this absence of data from the Applicant, or because of it, on October 7, 2019 Applicant requested from FERC an extension of time to submit data FERC had requested on flooding and operational safety.[11] Previously, on August 7, 2019, FERC had issued an Additional Information Request to Applicant asking it to develop further information related to the Commission staff's operating recommendations and the potential of these recommendations to affect flooding and safe project operations. The Request had a response within 60 days, *i.e.* by October 7, 2019, presumably based on FERC's assumption that the Applicant would not make the flooding claim it did in January 2019 without already possessing the technical data needed to support its January claim. But Applicant's response letter resisted prompt filing of this information with FERC, requesting instead that the Commission grant it an extension of time until January 7, 2020 to develop and submit the flooding information -- information that the Applicant claims to be directly relevant to water drawdown issue that DEP must resolve in its certification decisionmaking. DSF is concerned that this data will be submitted by Applicant in an attempt to circumvent the state's water quality certification requirements and potentially justify a greater range of annual water drawdown at the Graham Lake impoundment based on renewed, but unjustified flooding concerns.

[9] FEA at 335, Table 43.

[10] January 21, 2019 Ellsworth Hydroelectric Project (FERC No. P-2727-092) Licensee's Comments on Draft Environmental Assessment at 5.

[11] *See* Brookfield Correspondence to FERC dated October 7, 2019, FERC Docket P-2727, Document Accession Number 20191007-5130 at 1-2.

C. DSF and the Public will be severely prejudiced by this late submission of data and requests that DEP demand that the Applicant provide all of the data that Applicant and its consultant possess, so that the public has time to analyze and comment on the potential impact on water quality. If the Applicant refuses to comply immediately, this information should not be considered by DEP when it is received.

DSF is concerned that Applicant is "gaming the system" by giving itself an entire year – from January 2019 to January 2020 -- to prepare and then reveal what it has asserted to be highly relevant flooding data, thus providing both DEP and the stakeholders to this certification process only a matter of weeks in which to receive, analyze and comment on Applicant's filing. DSF believes that the Applicant is well aware that the certification timing is compressed and that such a time frame, given the potential impacts and extensive technical analysis required to assess any data related to changes in FERC's recommended water drawdown levels, is extremely prejudicial not only to DSF and the public, but DEP as well.

According DSF demands that Applicant's January 2020 submittal be excluded from this certification, and that DEP adopt the FERC recommended 4.5 water level drawdown, or in the alternative that Applicant, following its submission of data to FERC, be required to provide its data as soon as possible to the public for analysis in connection with its Application proposal.

II. DEP MUST DENY APPLICANT'S REQUEST FOR WATER QUALITY CERTIFICATION BECAUSE APPLICANT'S OPERATIONS OF ITS UNION RIVER HYDROPOWER PROJECT CAUSES NON-ATTAINMENT OF THE APPLICABLE DISSOLVED OXYGEN NUMERIC CRITERIA, AND NOTHING IN THE APPLICATION PROPOSES TO REMEDY ITS VIOLATIONS.

As explained more fully below, the only dissolved oxygen water quality testing data undertaken and relied upon by Applicant in its FERC license and DEP certification applications demonstrates that during the summer months certain dissolved oxygen levels for the section of the Union River immediately upstream of the Ellsworth Dam is below the applicable Class B dissolved oxygen water quality criteria. Results from historical water quality testing data, presented here, are consistent with Applicant's 2013 data showing non-attainment. Applicant's hydropower operations cause or, at the least, very significantly contribute to these violations. Applicant does not present any data or rationale in its Application that demonstrates that changes it is proposing to its current operations will bring Leonard Lake into compliance with water quality criteria.[12] As such, DEP must deny its request for water quality certification.

A. The Applicable Water Quality Criteria for the Waters of the Union River Upstream of the Ellsworth Dam

The water quality criteria and designated uses applicable to waters of the Union River upstream of the Ellsworth Dam are determined by how these waters are classified. As DEP

[12] For example, changes in minimum flows or drawdown regime of Graham Lake.

publicly stated at the public meeting it held in Ellsworth in July 2019, the Union River "from the outlet of Graham Lake to tidewater" is classified as Class B. *See* 38 MRSA §467(18)A. Importantly, this classification was legislated in 1989 and has been unchanged since that time. *This Class B classification applies to and includes Leonard Lake,* the impoundment created by and immediately upstream of the Ellsworth Dam.

As the analysis below will explain, *for purposes of determining water quality compliance it is illegal to treat Leonard Lake as a great pond, and therefore illegal to apply the GPA classification to it*. FERC was legally incorrect in thinking this GPA classification applied to water quality determinations for Leonard Lake[13], and the Applicant in its (deliberate?) silence on this legal issue perpetuated initial misunderstanding of this situation by DEP several years ago[14] – an initial misunderstanding that DSF believes DEP has now rectified.

The analysis underlying DSF's position on the legally applicable dissolved oxygen criteria is straightforward and in fact has been clearly articulated in writing by DEP within the last year, in at least the water quality certification DEP issued for the *American Tissue* facility on Cobboseecontee Stream.[15] Specifically:

> **1. Leonard Lake is not a "great pond" and therefore is not exempt from Class B criteria.**
>
> The statutory language found at 38 MRSA §480(5) defining great ponds states that:
>
> "great ponds means any inland bodies of water which in a natural state have a surface area in excess of 10 acres and any inland bodies of water artificially formed or increased which have a surface area in excess of 30 acres."

If DEP were determining the applicable dissolved oxygen numeric criteria for Leonard Lake based solely on this definition – apparently as FERC did, with the acquiescence of the Applicant -- the waters comprising Leonard Lake indeed would be classified as a great pond and not Class B waters, and no dissolved oxygen criteria would exist. However, in the opening paragraph of 38 MRSA §465-A, the "Standards for Classification of Lakes and Ponds," it states "*Impoundments of rivers* that are defined as great ponds pursuant to section 480-B are classified as GPA *or as specifically provided in sections 467 and 468.*" (emphasis added). And as we know, in section 467, in paragraph 18, the Legislature "specifically provided" that the waters below Graham Lake are Class B. The resulting meaning of this language is that, for purposes of

[13] *See* FERC's *Final Environment Assessment for Hydropower License, Ellsworth Hydroelectric Project,* July 2019, page 49, in which FERC states, "Maine DEP classifies Graham Lake and Leonard Lake as "GPA" waters, which are defined, in part, as any inland body of water artificially formed or increased with a surface are exceeding 30 acres."
[14] *See* Letter from Kathy Davis Howatt to Kimberly D. Bose, October 7, 2015.
[15] *See American Tissue Hydroelectric Project, #L-16416-33-E-N, Water Quality Certification,* November 29, 2018, pgs. 5-6 (hereinafter "American Tissue Certification.").

determining compliance with water quality criteria, DEP must apply the narrative and numeric requirements that attend to Class B waters.

2. What are the dissolved oxygen requirements that attend to Class B *impounded* waters? To answer this question, a two-step analysis is required.

The first step: 38 MRSA § 465(3)B, states that:
The dissolved oxygen content of Class B waters may not be less than 7 parts per million or 75% of saturation, whichever is higher, except that for the period from October 1st to May 14th, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean dissolved oxygen concentration may not be less than 9.5 parts per million and the one-day minimum dissolved oxygen concentration may not be less than 8.0 parts per million in identified fish spawning areas.

This statutory language dictates that, absent an overriding statutory provision for impounded Class B waters that alters this "7 parts per million or 75% of saturation, whichever is higher" requirement, all parts of the water column in the waters that make up Leonard Lake must meet it.

The second step: The Legislature, recognizing the inherent hydrologic challenges to attaining compliance with the dissolved oxygen requirements in *all* parts of an impoundment, particularly a deep impoundment with thermal stratification occurring during the warmer summer months, modified the numeric criteria requirements for the impounded portions of Class B waters by enacting the following language at 38 MRSA § 464(13):

Measurement of dissolved oxygen in riverine impoundments. Compliance with dissolved oxygen criteria in existing riverine impoundments must be measured as follows.

A. Compliance with dissolved oxygen criteria may not be measured within 0.5 meters of the bottom of existing riverine impoundments. [2003, c. 257, §1 (NEW).]

B. Where mixing is inhibited due to thermal stratification in an existing riverine impoundment, compliance with numeric dissolved oxygen criteria may not be measured below the higher of:

(1) The point of thermal stratification when such stratification occurs; or

(2) The point proposed by the department as an alternative depth for a specific riverine impoundment based on all factors included in section 466, subsection 11-A and for which a use attainability analysis is conducted if required by the United States Environmental Protection Agency.

For purposes of this paragraph, "thermal stratification" means a change of temperature of at least one degree Celsius per meter of depth, causing water below this point in an

> impoundment to become isolated and not mix with water above this point in the impoundment. [2003, c. 257, §1 (NEW).]
>
> C. Where mixing is inhibited due to natural topographical features in an existing riverine impoundment, compliance with numeric dissolved oxygen criteria may not be measured within that portion of the impoundment that is topographically isolated. Such natural topographic features may include, but not be limited to, natural deep holes or river bottom sills. [2003, c. 257, §1 (NEW).] (bolded emphasis in original).

Notwithstanding the provisions of this subsection, dissolved oxygen concentrations in existing riverine impoundments must be sufficient to support existing and designated uses of these waters. For purposes of this subsection, "existing riverine impoundments" means all impoundments of rivers and streams in existence as of January 1, 2001 and not otherwise classified as GPA.

The above statutory language determines the dissolved oxygen standards for the waters comprising the Leonard Lake impoundment: 38 MRSA § 464(13) applies to Leonard Lake because of the very last sentence in Section 13 which states: "For purposes of this subsection, "existing riverine impoundments" means all impoundments of rivers and streams in existence as of January 1, 2001 and not otherwise classified as GPA." We know that the Leonard Lake riverine impoundment was in existence "as of January 1, 2001." We further know that Leonard Lake is "not otherwise classified as GPA."

Importantly, the ramifications of this proper (vs. FERC and maybe Applicant) interpretation of the statutory framework for measuring and determining compliance with its Class B dissolved oxygen requirements are as follows:

> (1) if dissolved oxygen levels in Leonard Lake, as measured above the "point of thermal stratification" and above 0.5 meters from the bottom of the impoundment, are either below 7 ppm or 75% of saturation, *those waters are not in compliance with Class B standards*, unless either (i) an "alternative depth for a specific riverine impoundment", pursuant to paragraph 13B(2), has been established – *which has not occurred for Leonard Lake* – or (ii) because the waters in which the below-7ppm or 75% measurements are occurring are "topographically isolated" due to "natural topographical features in an existing riverine impoundment," *which features do not exist in Leonard Lake and have never been claimed to exist by the Applicant;*[16] and

[16] The Applicant has provided no bathymetry suggesting that a natural topographic feature exists. In the bathymetry map prepared for the Applicant by consultant HDR and submitted by Applicant as part of its application (*See Upstream Fish Passage Alternatives Study*, Prepared by HDR Engineering, Inc., December 2015, at page 48), there is no assertion of a "topographically isolated" portion of the river bottom of Leonard Lake, and in fact the commentary by HDR a few pages later, on page 51, suggests just the opposite:

> "Sampling conducted in Lake Leonard revealed that the lake did stratify over much of the summer. Removal of the dams would mean that the free-flowing Union River would not stratify and would likely have lower water temperatures and somewhat higher dissolved oxygen levels."

(2) Furthermore, upriver of the impounded waters, if dissolved oxygen measurements *anywhere* in the water column below Graham Lake were to show dissolved oxygen levels below 7 ppm or 75% of saturation, water quality criteria also are not being met.

B. Applicant's Own Data Demonstrates that Applicable Dissolved Oxygen Requirements Are Not Being Met in Leonard Lake

In September 2014 the Applicant submitted a report to FERC prepared by the firm TRC of Augusta, Maine.[17] This report presented the results of dissolved oxygen testing that occurred during the 2013 field season. This was the only year of dissolved oxygen monitoring conducted by the Applicant and constitutes the entire record of dissolved oxygen data contained in its certification application – and thus the only data on which the Applicant is relying in asking DEP to certify that its project meets applicable dissolved oxygen criteria.

As shown on TRC's "Attachments 2a and 2b - Graham Lake, Leonard Lake and Union River DO-Temperature Profiles and Secchi Dish Data," during three days of sampling – *almost one-third of all days of dissolved oxygen sampling conducted by TRC* – TRC's data shows violations of applicable Class B numeric dissolved oxygen criteria in Leonard Lake:

- On 6/27/2013, dissolved levels were recorded below 7ppm / 75% saturation beginning at depths of 12 meters. No thermal stratification was observed on this date.
- On 8/8/2013, dissolved oxygen levels were recorded below 7ppm / 75% saturation between the depths of 8-10 meters. Thermal stratification began at 11 meters on this date.
- On 8/22/2013, dissolved oxygen levels were recorded below 7ppm / 75% saturation at the depth of 11 meters. Thermal stratification began at 12 meters on this date.[18]

Thus, pursuant to 38 MRSA § 464(13), TRC's sampling demonstrates violations of Class B requirements on each of these days. No explanations were provided, and other than the Graham Lake dam, DSF is unaware of any significant point or non-point source discharges of BOD upstream of the Ellsworth Dam.

The only original map that DSF was able to locate showing bathymetry of this portion of the Union River was prepared by Maine IF&W in 1960. It appears that this is the same bathymetry data used by HDR in its map, although the data used by HDR in its report was not stated in its *Alternatives Study*. From the language of its survey, Maine IF&W identified *almost sixty years ago the dissolved oxygen problem in Leonard Lake*, and reaches the same conclusion as HDR:

> "Probably the lack of cool water in such a relatively deep lake is a result of the large turnover in water volume associated with power production at the hydroelectric plant." *See* Exhibit B

[17] Initial Study Report For the Ellsworth Hydroelectic Project (FERC No. 2727), TRC, September 2014.

[18] *See* Exhibits C-1 and C-2 for this TRC data and DSF's explication of how it violates Class B dissolved oxygen criteria.

Exhibit B: Maine IF&W narrative and 1960 bathymetry survey map.

LEONARD LAKE
Ellsworth Twp., Hancock Co.
U. S. G. S. Ellsworth, Me.

Fishes

Smallmouth bass	Eel
White perch	White sucker
Yellow perch	Minnows
Chain pickerel	Golden shiner
Hornpout (bullhead)	Pumpkinseed sunfish

Physical Characteristics

Area - 90 acres	Temperatures
	Surface - 75° F.
Maximum depth - 55 feet	55 feet - 63° F.

Leonard Lake is an impoundment formed by a high hydroelectric dam located at head of tide on the Union River. The Lake is extremely scenic and surprisingly undeveloped considering its location virtually within the city of Ellsworth. You can land your boat from the Branch Lake road at a point about ½ mile above the dam on the west shore of the lake.

Leonard Lake is quite deep, but in summer there is relatively little cool water, most of which is low in dissolved oxygen. Probably the lack of cool water in such a relatively deep lake is a result of the large turnover in water volume associated with power production at the hydroelectric plant.

We recommend management for the several species of warmwater game fish already present. White perch and smallmouth bass will provide the best sport fisheries and both species will maintain their populations naturally.

No coldwater species should be stocked at the present time.

Surveyed - August, 1960
Maine Department of Inland Fisheries and Game

Contribution from Dingell-Johnson
Project F-3-R, MAINE

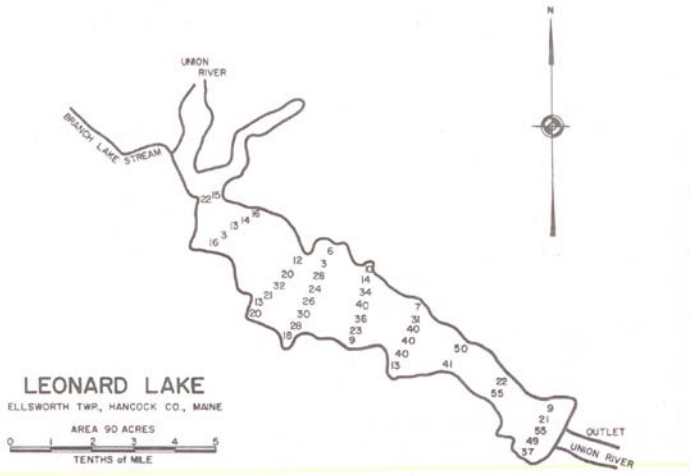


Exhibit C-1: TRC Data from Initial Study Report For the Ellsworth Hydroelectic Project (FERC No. 2727), TRC, September 2014.

6/27/2013 continued

Station #2- Southern Site Secchi Depth: 2.3M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	21.7	8.0	91.0
1m	21.7	8.0	91.0
2m	21.7	8.0	91.0
3m	21.7	8.0	91.0
4m	21.7	8.0	91.0
5m	19.6	6.2	67.7
6m	19.4	6.1	66.3
7m	19.2	6.2	67.2
8m	19.0	6.1	65.8
9m	18.6	5.9	63.1
10m	18.3	5.8	61.7
11m	17.8	5.6	59.0
12m	16.9	4.3	44.4
13m	16.2	2.8	28.5

Lake Leonard Secchi Depth: 2.3M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	21.6	8.2	93.1
1m	21.6	8.2	93.1
2m	21.5	8.2	92.9
3m	21.4	8.2	92.7
4m	21.3	8.1	91.4
5m	21.0	8.0	89.8
6m	20.6	8.0	89.1
7m	20.0	7.9	87.0
8m	19.1	7.7	83.3
9m	18.6	8.2	87.8
10m	18.4	8.0	85.3
11m	18.2	7.5	79.6
12m	18.1	6.8	72.1
13m	17.9	6.4	67.5
14m	17.6	5.9	61.9
15m	17.2	5.1	53.0
16m	16.5	4.3	44.1
17m	15.7	2.1	21.1

Data Collectors: Karla Fortier & Dan Sweeney

08/08/13

Lake Leonard Secchi Depth: 2.5M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	22.5	8.1	93.5
1m	22.6	8.1	93.7
2m	22.6	8.1	93.7
3m	22.5	7.8	90.1
4m	22.4	7.7	88.7
5m	22.2	7.6	87.2
6m	22.0	7.3	83.5
7m	21.8	6.8	77.5
8m	21.7	6.2	70.5
9m	21.5	5.4	61.2
10m	21.1	4.4	49.5
11m	19.6	2.2	24.0
12m	17.5	0.4	4.1
13m	16.7	0.4	4.1
14m	16.2	0.4	4.0
15m	15.8	0.4	4.0
16m	15.2	0.4	3.9

Union River

A.M. Secchi Depth: 2.1M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	21.3	8.9	100.5
1m	21.3	8.9	100.5
2m	21.4	8.9	100.6
3m	21.4	8.9	100.6
4m	21.4	8.9	100.6

P.M. Secchi Depth: 2.2M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	21.5	8.8	99.7
1m	21.5	8.8	99.7
2m	21.5	8.8	99.7
3m	21.4	8.8	99.5
4m	21.4	8.8	99.5

Data Collectors: Karla Fortier & Dan Sweeney

08/22/13

Lake Leonard Secchi Depth: 2.35M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	22.6	8.8	101.8
1m	22.6	8.8	101.8
2m	22.6	8.8	101.8
3m	22.3	8.8	101.2
4m	22.3	8.8	101.2
5m	22.1	8.7	99.7
6m	22.0	8.7	99.5
7m	21.8	8.7	99.1
8m	21.8	8.7	99.1
9m	21.6	8.5	96.5
10m	21.3	8.1	91.4
11m	20.5	6.5	72.2
12m	17.7	0.4	4.2
13m	16.7	0.4	4.1
14m	16.0	0.4	4.0
15m	15.6	0.4	4.0

Union River

A.M. Secchi Depth: 2.2M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	21.8	9.6	109.4
1m	21.8	9.6	109.4
2m	21.8	9.6	109.4
3m	21.8	9.6	109.4
4m	21.8	9.6	109.4

P.M. Secchi Depth: 2.4M

	Temp °C	DO (mg/l)	DO (%sat)
Surface	22.4	9.4	108.3
1m	22.4	9.4	108.3
2m	22.4	9.4	108.3
3m	22.4	9.4	108.3
4m	22.4	9.4	108.3

Exhibit C-2: TRC Data from Initial Study Report For the Ellsworth Hydroelectic Project (FERC No. 2727), TRC, September 2014 showing violations.

TRC, 2014, p. 89

Lake Leonard 6/27/2013 Secchi Depth: 2.3M

	Temp °C	DO (mg/l)	DO (%sat)	
Surface	21.6	8.2	93.1	
1m	21.6	8.2	93.1	
2m	21.5	8.2	92.9	
3m	21.4	8.2	92.7	
4m	21.3	8.1	91.4	
5m	21.0	8.0	89.8	
6m	20.6	8.0	89.1	
7m	20.0	7.9	87.0	
8m	19.1	7.7	83.3	
9m	18.6	8.2	87.8	
10m	18.4	8.0	85.3	
11m	18.2	7.5	79.6	
12m	18.1	6.8	72.1	Violation
13m	17.9	6.4	67.5	
14m	17.6	5.9	61.9	
15m	17.2	5.1	53.0	
16m	16.5	4.3	44.1	
17m	15.7	2.1	21.1	

TRC, 2014, p. 98

Data Collectors: Karla Fortier & Dan Sweeney
08/08/13
Lake Leonard Secchi Depth: 2.5M

	Temp °C	DO (mg/l)	DO (%sat)	
Surface	22.5	8.1	93.5	
1m	22.6	8.1	93.7	
2m	22.6	8.1	93.7	
3m	22.5	7.8	90.1	
4m	22.4	7.7	88.7	
5m	22.2	7.6	87.2	
6m	22.0	7.3	83.5	
7m	21.8	6.8	77.5	
8m	21.7	6.2	70.5	Violation
9m	21.5	5.4	61.2	
10m	21.1	4.4	49.5	
11m	19.6	2.2	24.0	Thermal stratification
12m	17.5	0.4	4.1	
13m	16.7	0.4	4.1	
14m	16.2	0.4	4.0	
15m	15.8	0.4	4.0	
16m	15.2	0.4	3.9	

TRC, 2014, p. 101

Data Collectors: Karla Fortier & Dan Sweeney
08/22/13
Lake Leonard Secchi Depth: 2.35M

	Temp °C	DO (mg/l)	DO (%sat)	
Surface	22.6	8.8	101.8	
1m	22.6	8.8	101.8	
2m	22.6	8.8	101.8	
3m	22.3	8.8	101.2	
4m	22.3	8.8	101.2	
5m	22.1	8.7	99.7	
6m	22.0	8.7	99.5	
7m	21.8	8.7	99.1	
8m	21.8	8.7	99.1	
9m	21.6	8.5	96.5	
10m	21.3	8.1	91.4	
11m	20.5	6.5	72.2	Violation
12m	17.7	0.4	4.2	Thermal stratification
13m	16.7	0.4	4.1	
14m	16.0	0.4	4.0	
15m	15.6	0.4	4.0	

C. The Only Other Modern Data Set Recording Dissolved Oxygen Levels in the Waters Between Graham Lake and the Ellsworth Dam Confirm the Existence of Water Quality Violations

From 2003 – 2006, water quality data, including dissolved oxygen measurements, was collected in the Union River by the Union River Watershed Coalition (URWC), under the guidance and supervision of DEP. Based on discussions with DEP, DSF understands that this data set constitutes the only other 21st Century dissolved oxygen dataset for the waters between Graham Lake and the Ellsworth Dam, other than the 2013 TRC data set.[19]

The reports of this data, including methodology and results, were published by URWC and contain contributions from Maine DEP (the 2003 report was co-authored by DEP staff; in 2004-2006, DEP staff were on the Technical Committee).[20] This study collected data from 27 sites in the watershed, with three sites occurring between Graham Lake and the Ellsworth Dam: Site 2.2 -- Leonard Lake Picnic area; Site 2.3 -- Downstream of Rt. 1A in the mainstem, and Site 2.4 -- Downstream of Graham Lake. Sites were sampled annually from April to October. Various water quality parameters were sampled including dissolved oxygen. To note is that the dissolved oxygen sampling was conducted near the surface, eliminating the possibility of sampling below the thermocline. The results that are relevant to the Application are as follows:

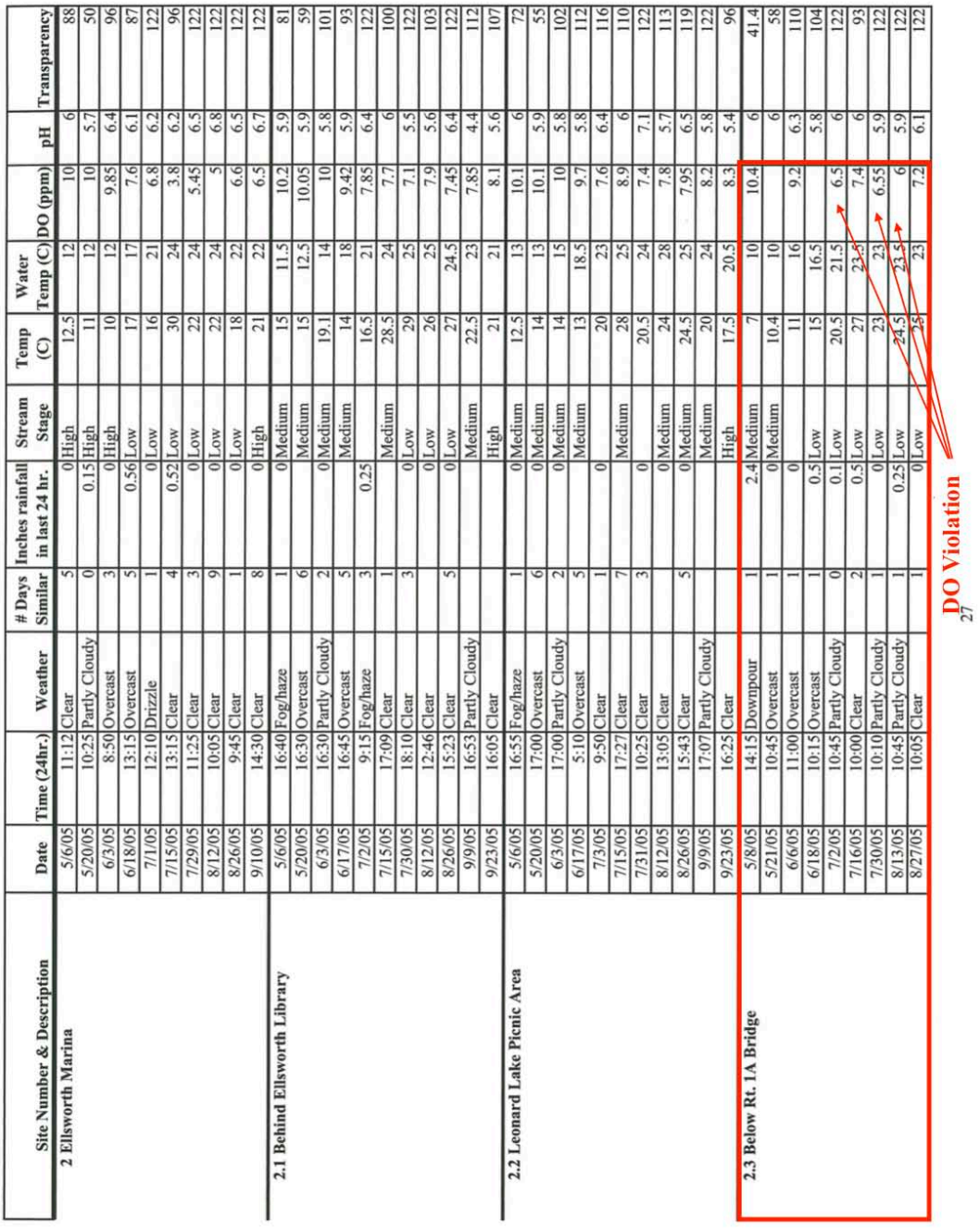
- In the 2004 report, DO measurements were below 7ppm or 75% saturation *four times* downstream of Graham Lake Dam during the warmer months: 5/2/04 - 6.4 ppm, 7/1/04 - 6.2 ppm, 7/10/04 - 5.2 ppm, and 9/21/04 - 5.8 ppm.
- In the 2005 report, DO measurements were below 7ppm or 75% of saturation *three times* in the mainstem below the Rt. 1A bridge during the warmer months: 7/2/05 - 6.5 ppm, 7/30/05 - 6.55 ppm, and 8/13/05 - 6 ppm.

While DSF acknowledges that DEP cannot deduce from this data what was happening with pre-2013 dissolved oxygen levels in the deeper but still above-thermocline portions of Leonard Lake (since only surface samples were taken), the existence of below-criteria dissolved oxygen levels throughout two summers in the immediately-upstream section of the river – a river stretch that should be well-oxygenated -- is highly suggestive of inherent dissolved oxygen problems in Leonard Lake (and possibly upstream) caused by Project operations. All of which underscores TRC's 2013 findings of non-attainment and serves to confirm *the systemic, inherent nature of the violations.*

[19] However, as noted in footnote 14 and Exhibit B, as early as 1960 Maine IF&W identified dissolved oxygen problems in Leonard Lake.

[20] *See* Exhibits D-1 and D-2 for these URWC reports.

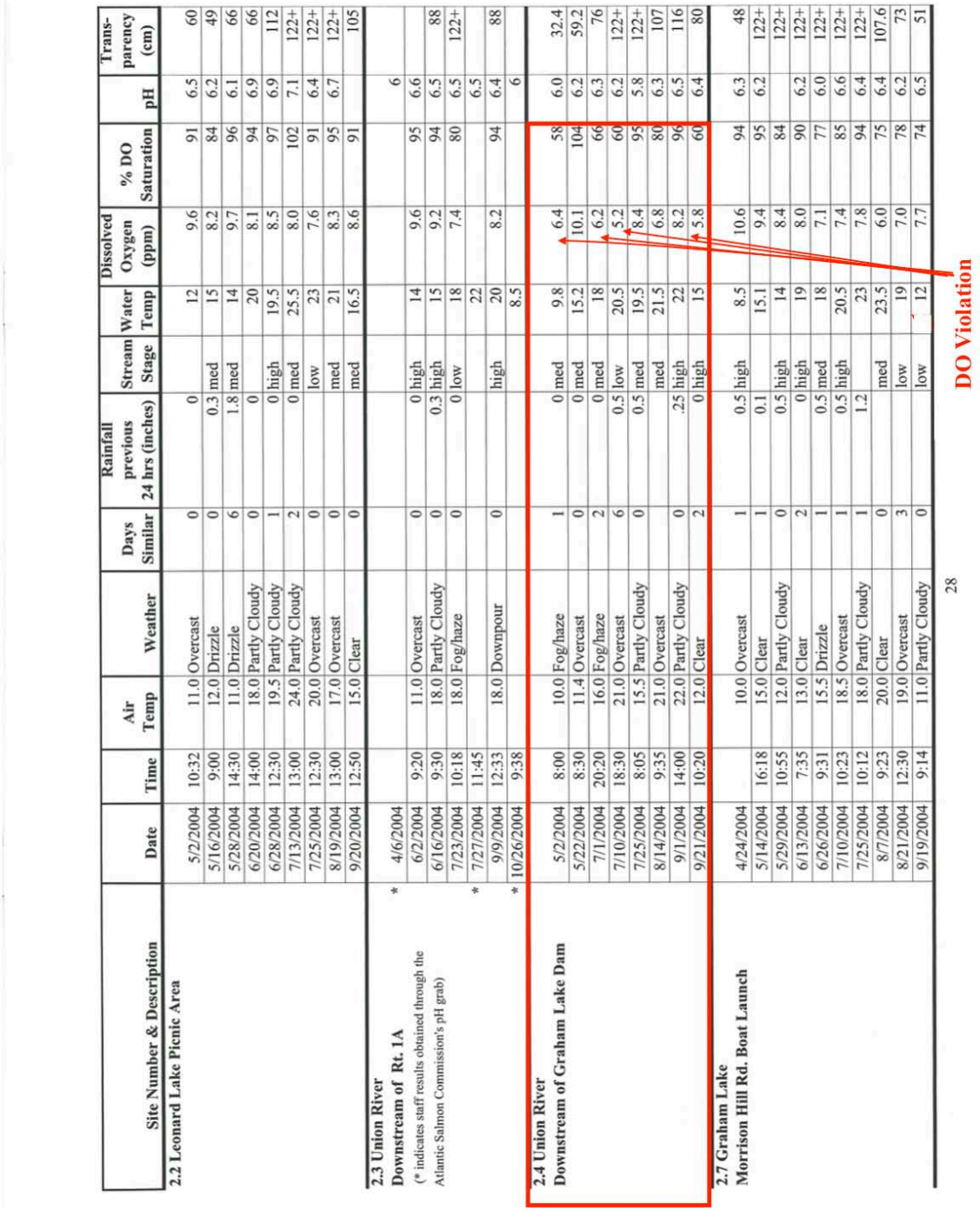
Exhibit D-1: Union River Watershed Coalition Volunteer Water Quality Data 2005 dissolved oxygen violations (excerpt).



Site Number & Description	Date	Time (24hr.)	Weather	# Days Similar	Inches rainfall in last 24 hr.	Stream Stage	Temp (C)	Water Temp (C)	DO (ppm)	pH	Transparency
2 Ellsworth Marina	5/6/05	11:12	Clear	5	0	High	12.5	12	10	6	88
	5/20/05	10:25	Partly Cloudy	0	0.15	High	11	12	10	5.7	50
	6/3/05	8:50	Overcast	3	0	High	10	12	9.85	6.4	96
	6/18/05	13:15	Overcast	5	0.56	Low	17	17	7.6	6.1	87
	7/1/05	12:10	Drizzle	1	0	Low	16	21	6.8	6.2	122
	7/15/05	13:15	Clear	4	0.52	Low	30	24	3.8	6.2	96
	7/29/05	11:25	Clear	3	0	Low	22	24	5.45	6.5	122
	8/12/05	10:05	Clear	9	0	Low	22	24	5	6.8	122
	8/26/05	9:45	Clear	1	0	Low	18	22	6.6	6.5	122
	9/10/05	14:30	Clear	8	0	High	21	22	6.5	6.7	122
2.1 Behind Ellsworth Library	5/6/05	16:40	Fog/haze	1	0	Medium	15	11.5	10.2	5.9	81
	5/20/05	16:30	Overcast	6		Medium	15	12.5	10.05	5.9	59
	6/3/05	16:30	Partly Cloudy	2	0	Medium	19.1	14	10	5.8	101
	6/17/05	16:45	Overcast	5		Medium	14	18	9.42	5.9	93
	7/2/05	9:15	Fog/haze	3	0.25		16.5	21	7.85	6.4	122
	7/15/05	17:09	Clear	1		Medium	28.5	24	7.7	6	100
	7/30/05	18:10	Clear	3	0	Low	29	25	7.1	5.5	122
	8/12/05	12:46	Clear		0	Low	26	25	7.9	5.6	103
	8/26/05	15:23	Clear	5	0	Low	27	24.5	7.45	6.4	122
	9/9/05	16:53	Partly Cloudy			Medium	22.5	23	7.85	4.4	112
	9/23/05	16:05	Clear			High	21	21	8.1	5.6	107
2.2 Leonard Lake Picnic Area	5/6/05	16:55	Fog/haze	1	0	Medium	12.5	13	10.1	6	72
	5/20/05	17:00	Overcast	6	0	Medium	14	13	10.1	5.9	55
	6/3/05	17:00	Partly Cloudy	2	0	Medium	14	15	10	5.8	102
	6/17/05	5:10	Overcast	5		Medium	13	18.5	9.7	5.8	112
	7/3/05	9:50	Clear	1	0		20	23	7.6	6.4	116
	7/15/05	17:27	Clear	7		Medium	28	25	8.9	6	110
	7/31/05	10:25	Clear	3	0		20.5	24	7.4	7.1	122
	8/12/05	13:05	Clear		0	Medium	24	28	7.8	5.7	113
	8/26/05	15:43	Clear	5	0	Medium	24.5	25	7.95	6.5	119
	9/9/05	17:07	Partly Cloudy			Medium	20	24	8.2	5.8	122
	9/23/05	16:25	Clear			High	17.5	20.5	8.3	5.4	96
2.3 Below Rt. 1A Bridge	5/8/05	14:15	Downpour	1	2.4	Medium	7	10	10.4	6	41.4
	5/21/05	10:45	Overcast	1	0	Medium	10.4	10		6	58
	6/6/05	11:00	Overcast	1	0		11	16	9.2	6.3	110
	6/18/05	10:15	Overcast	1	0.5	Low	15	16.5		5.8	104
	7/2/05	10:45	Partly Cloudy	0	0.1	Low	20.5	21.5	6.5	6	122
	7/16/05	10:00	Clear	2	0.5	Low	27	23.5	7.4	6	93
	7/30/05	10:10	Partly Cloudy	1	0	Low	23	23	6.55	5.9	122
	8/13/05	10:45	Partly Cloudy	1	0.25	Low	24.5	23.5	6	5.9	122
	8/27/05	10:05	Clear	1	0	Low	25	23	7.2	6.1	122

DO Violation

Exhibit D-2: Union River Watershed Coalition Volunteer Water Quality Data 2004 dissolved oxygen violations (excerpt).



Site Number & Description		Date	Time	Air Temp	Weather	Days Similar	Rainfall previous 24 hrs (inches)	Stream Stage	Water Temp	Dissolved Oxygen (ppm)	% DO Saturation	pH	Trans-parency (cm)
2.2 Leonard Lake Picnic Area		5/2/2004	10:32	11.0	Overcast	0	0		12	9.6	91	6.5	60
		5/16/2004	9:00	12.0	Drizzle	0	0.3	med	15	8.2	84	6.2	49
		5/28/2004	14:30	11.0	Drizzle	6	1.8	med	14	9.7	96	6.1	66
		6/20/2004	14:00	18.0	Partly Cloudy	0	0		20	8.1	94	6.9	66
		6/28/2004	12:30	19.5	Partly Cloudy	1	0	high	19.5	8.5	97	6.9	112
		7/13/2004	13:00	24.0	Partly Cloudy	2	0	med	25.5	8.0	102	7.1	122+
		7/25/2004	12:30	20.0	Overcast	0		low	23	7.6	91	6.4	122+
		8/19/2004	13:00	17.0	Overcast	0		med	21	8.3	95	6.7	122+
		9/20/2004	12:50	15.0	Clear	0		med	16.5	8.6	91		105
2.3 Union River Downstream of Rt. 1A	*	4/6/2004										6	
(* indicates staff results obtained through the Atlantic Salmon Commission's pH grab)		6/2/2004	9:20	11.0	Overcast	0	0	high	14	9.6	95	6.6	
		6/16/2004	9:30	18.0	Partly Cloudy	0	0.3	high	15	9.2	94	6.5	88
		7/23/2004	10:18	18.0	Fog/haze	0	0	low	18	7.4	80	6.5	122+
	*	7/27/2004	11:45						22			6.5	
		9/9/2004	12:33	18.0	Downpour	0		high	20	8.2	94	6.4	88
	*	10/26/2004	9:38						8.5			6	
2.4 Union River Downstream of Graham Lake Dam		5/2/2004	8:00	10.0	Fog/haze	1	0	med	9.8	6.4	58	6.0	32.4
		5/22/2004	8:30	11.4	Overcast	0	0	med	15.2	10.1	104	6.2	59.2
		7/1/2004	20:20	16.0	Fog/haze	2	0	med	18	6.2	66	6.3	76
		7/10/2004	18:30	21.0	Overcast	6	0.5	low	20.5	5.2	60	6.2	122+
		7/25/2004	8:05	15.5	Partly Cloudy	0	0.5	med	19.5	8.4	95	5.8	122+
		8/14/2004	9:35	21.0	Overcast			med	21.5	6.8	80	6.3	107
		9/1/2004	14:00	22.0	Partly Cloudy	0	.25	high	22	8.2	96	6.5	116
		9/21/2004	10:20	12.0	Clear	2	0	high	15	5.8	60	6.4	80
2.7 Graham Lake Morrison Hill Rd. Boat Launch		4/24/2004		10.0	Overcast	1	0.5	high	8.5	10.6	94	6.3	48
		5/14/2004	16:18	15.0	Clear	1	0.1		15.1	9.4	95	6.2	122+
		5/29/2004	10:55	12.0	Partly Cloudy	0	0.5	high	14	8.4	84		122+
		6/13/2004	7:35	13.0	Clear	2	0	high	19	8.0	90	6.2	122+
		6/26/2004	9:31	15.5	Drizzle	1	0.5	med	18	7.1	77	6.0	122+
		7/10/2004	10:23	18.5	Overcast	1	0.5	high	20.5	7.4	85	6.6	122+
		7/25/2004	10:12	18.0	Partly Cloudy	1	1.2		23	7.8	94	6.4	122+
		8/7/2004	9:23	20.0	Clear	0		med	23.5	6.0	75	6.4	107.6
		8/21/2004	12:30	19.0	Overcast	3		low	19	7.0	78	6.2	73
		9/19/2004	9:14	11.0	Partly Cloudy	0		low	12	7.7	74	6.5	51

DO Violation

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D. The Applicant Proposes No Changes in its Operations That Will Result in Compliance with the Dissolved Oxygen Requirements

Were the Applicant's Union River dams not in place and causing a reduction in natural reaeration, increasing time of travel for the water column and creating a settling basin for sediments and nutrients in the Leonard Lake impoundment, there is absolutely no information in the record to suggest that Class B dissolved oxygen criteria would not be met. Ignoring these facts and the clear implications of its own consultants' dissolved oxygen testing data (as underscored by historic data), the Application is entirely silent on this issue; it contains no proposals targeted at addressing these violations. No reaeration or DO infusion measures were proposed, as have been instituted by DEP in other hydropower certifications when below-criteria dissolved oxygen problems in impoundments have been found and measures required to achieve compliance. The changes Applicant proposes to minimum flow and Graham Lake cycling are not intended to improve dissolved oxygen in Leonard Lake, and the Applicant has presented no data to show that they will. As such, DEP is legally required to deny Applicant's certification request.

III. DEP MUST DENY APPLICANT'S REQUEST FOR WATER QUALITY CERTIFICATION BECAUSE APPLICANT'S OPERATIONS OF ITS UNION RIVER HYDROPOWER PROJECT CAUSES NON-ATTAINMENT OF THE APPLICABLE AQUATIC LIFE STANDARDS, AND BECAUSE NOTHING IN ITS DEP APPLICATION FOR CERTIFICATION PROPOSES TO REMEDY ITS VIOLATIONS.

As explained more fully below, the macroinvertebrate water quality testing data that to date has been submitted by Applicant demonstrates that during the summer months the applicable Class B standards for aquatic life in the riverine portions of the project area upstream of Leonard Lake are being violated. Its Application does not argue that this failure to meet a classification use is caused by any other discharge, nor does the Application demonstrate how the designated use will achieved under the terms proposed in the Application. As such, DEP must deny Applicant's request for water quality certification.

A. The Applicable Water Quality Criteria for the Waters of the Union River Upstream of Leonard Lake.

As discussed in Section II above, the portion of the Union River downstream of Graham Lake is legislated as Class B, which contains two applicable requirements on this issue:

> First, "Class B waters must be of such quality that they are suitable for the designated uses … habitat for fish and other aquatic life. The habitat must be characterized as unimpaired."
>
> Second, "Discharges to Class B waters may not cause adverse impact to aquatic life in that the receiving waters must be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community."[21]

[21] *See* 38 MRSA section 465(3).

B. The Applicant's Own Data Demonstrates that Class B Aquatic Life Requirements Are Not Being Met in the Union River Upstream of Leonard Lake.

Statements in both TRC's reports and by the Applicant in the application self-acknowledge that the above two Class B requirements were not achieved during two years of pre-application sampling by TRC. Apparently, this fact first became known to Applicant from the initial sampling downstream of Graham Lake conducted by TRC and reviewed by DEP in 2014. This initial sampling was then followed by TRC's sampling of three sites in 2015 downstream of Graham Lake using rock bags/baskets, all upstream of Leonard Lake.[22]

Commenting on the results of this sampling, in the summary of the TRC report that accompanied the Applicant's December 30, 2015 filing, TRC employees stated:

> 6. It is my professional opinion that the macroinvertebrate communities sampled downstream of the Graham Lake Dam on the Union River *do not attain Class B aquatic life standards*.
>
> 7. The data was sent to MDEP for analysis in the State's linear discriminant model, and based on the model results and best professional judgment, the MDEP determined that the sites *attained Class C standards*.[23]

Then, in the Application itself, Applicant stated:

> Macroinvertebrate sampling in 2014 showed a hyperdominance of net spinning caddisflies in the Graham Lake tailwater, a phenomenon commonly seen in rivers below lakes and reservoirs. Following consultation with Maine DEP, additional macroinvertebrate sampling was conducted in the summer of 2015. The results of the additional sampling are similar to the sampling results from the 2014 sampling i.e., there was a hyperdominance of certain species that is common below both reservoirs and natural lakes. The 2015 Macroinvertebrate Sampling Study is presented in Appendix E-3. Based on the Maine DEP linear discriminant model used to assess attainment with state water quality standards, the Union River downstream of Graham Lake Dam achieves a Class C aquatic life standard. Regardless of how the Project is operated, it is likely that the riverine reach below Graham Lake will continue to support a macroinvertebrate community dominated by species that are responsive to the abundant food source provided downstream of a large lake.[24]

C. The Application Proposes No Changes to Project Operations That Will Result in Compliance with the Aquatic Life Requirements

Succinctly stated, achieving Class C standards is not good enough – *i.e., not legal* – for a river section the Legislature has classified as B. As with dissolved oxygen, the Application contains no proposals that it contends will correct these violations. In fact, the comments quoted

[22] The reported locations were 950 feet, 1750 feet and 1.92 miles downstream of Graham Lake.
[23] *"Ellsworth Hydroelectric Project FERC No. 2727-086 Application for New License for Major Water Power Project – Existing Dam,"* December 30, 2015. Appendix E-3-2015 Macroinvertebrate Sampling Study at 12.
[24] Application at page E-4-34.

above suggest that the Applicant and its consultants believe the non-compliance is not changeable, although they do not say this explicitly. Unless Applicant can demonstrate either that its project operations (which includes both the Graham Lake and Ellsworth dams) are not causing or contributing to these violations, or that the changes in operations it proposes in its Application with bring the waters downstream of Graham Lake into compliance with aquatic life requirements, DEP is required to deny the request for water quality certification.

IV. IMMEDIATE UPSTREAM AND DOWNSTREAM VOLITIONAL FISH PASSAGE FOR AMERICAN SHAD IS REQUIRED BY STATE LAW.

The Applicant has not proposed that, upon certification and issuance of its FERC license, it will install permanent volitional upstream and downstream passage for indigenous American shad. As such, the Application ignores the agreed-upon agency/Applicant goal of restoring American shad to the species' historic habitat above the Ellsworth Dam, while at the same time acknowledging the failure of its current trap-and-truck operations to pass the remnant population of shad upstream of the dam so restoration can begin.[25] If the Ellsworth and Graham Lake Dams are operated going forward as Applicant proposes -- without volitional upstream and downstream shad passage -- applicable water quality uses of the Union River cannot be met. Based on now-established DEP water quality precedent, DSF contends that DEP must require immediate installation of permanent upstream shad passage at the Ellsworth Dam, to be followed in a phased, triggered manner by permanent upstream passage at the Graham Lake Dam if shad populations reach a certain count. Given both the history of this indigenous species in the Union and governmental fisheries management goals to restore shad -- the documentation of which spans three centuries – and given that all legally-necessary elements mandating fish passage as established by DEP's own legal precedent are established and in place, this immediate installation is not optional.

As discussed more fully below, these elements include:

1. Documented proof that American shad are indigenous to the upstream reaches of the Union River.

2. A federal, state and Applicant consensus that a "remnant" shad population exists downstream of the Ellsworth Dam in the mouth of the Union River, combined with DMR data showing shad in the migratory region of this species just downstream of the river.

3. Recent, ambitious restoration goals for shad on the Union River that have been established on more than one occasion by state and federal natural resource agencies, and acknowledged by the Applicant.

4. The fact that these Union River shad restoration goals cannot possibly be met without safe, timely and effective upstream and downstream volitional passage designed specifically for shad, due to the admitted failure of the current upstream fish passage trap-

[25] Ellsworth Hydroelectric Project FERC No. 2727 Upstream Fish Passage Alternatives Study, HDR Engineering, Inc. December 2015 (the "HDR Report")

and-truck mechanism to either attract or capture shad, and the absence of any meaningful amount of shad spawning habitat downstream of the Ellsworth Dam.

A. Historical Records Show That American Shad are Indigenous to the Union River, that an Excellent Fishery Once Existed Upstream of the Ellsworth Dam, and that Shad Returned to These Upstream Waters to Spawn.

1. By definition, the American shad is indigenous to the Union River.

The term "indigenous" is a statutorily defined term, meaning that a species is "supported in a reach of water or known to have been supported according to historical records compiled by State and Federal agencies or published scientific literature."[26] DSF has conducted extensive research into the recorded history of shad in the Union River watershed. As more fully discussed below, the historical record is clear and to DSF's knowledge undisputed: a robust fishery of shad once existed above the Ellsworth and Graham Lake Dams in the Union River and was gradually extirpated by the historical development and construction of dams along the mainstem of the river and its tributaries.

This assertion is supported by a legislative history that originates in 1815 from attempts to address the diminishing shad fishery due to the construction of dams and lack of passage. It is clear from this record (set out below) that a need for volitional fish passage in this watershed spans three centuries centuries and that the concern that the resident population of shad would be extirpated due to dam construction without passage was identified very early on. This did not prevent the development from occurring and the shad were eventually extirpated following the construction of the Ellsworth Dam and Graham Lake impoundment due to the fact that at construction, neither dam had suitable upstream or downstream passage for shad.

The recognition of shad as an extirpated species of importance following the construction of the Ellsworth and Graham dams specifically is also described in numerous regulatory, historical and anecdotal documents. These accounts (also set out below) all concern the Union River in a post- hydroelectric dam environment with no volitional passage; all refer to a depleted, residual population of shad. There appears to be no historical dispute that shad were once abundant and this appears in the scientific literature as well as the historical records.

Finally, the fact that state and federal natural resource agencies have all established and continually reaffirmed the goal of "restoring" shad to the Union River (see discussion below) constitutes consistent governmental recognition that shad once populated these waters – hence, the desire to "restore." Nowhere in the numerous resource plans is found the notion of introducing shad into the Union as a non-native species.

Thus, as more fully detailed below, shad are supported and were supported in the Union River and are by definition an indigenous species to the Union River watershed.

[26] 38 MRSA §466 subsection 8.

2. Prior to the construction of dams, the Union River and its upstream tributaries were home to a very large shad run, as well as salmon and river herring.

The Union River was the site of early colonial dam construction with records showing that the earliest documented dam construction was in 1766 and that a total of 36 (thirty-six) dams had been constructed on the river through 2006.[27] In the year 1800, two centuries prior to the construction of the Ellsworth head-of-tide dam in 1907, there was an estimated 481 kilometers of virgin stream spawning habitat available to alosines and approximately 93 square kilometers of virgin lake habitat.[28]

There are numerous historical observations of shad being caught in the Union River throughout the period of time from early settlement through the period marked by the development of dams and other obstructions on the main stem. One of the early historical accounts noted *"No river fisheries now exist here, though formerly salmon, shad, and alewives abounded. Especially good facilities are found at Ellsworth for the erection of dams, and they were improved at a very early date…In 1815, 1816, and 1823 the legislature passed acts regulating the fishery, but they were not sufficient to keep it alive many years.*"[29] Another account, a serialized history of Ellsworth published in Dec. 1900 by Henry L. Moor from information recorded by John L. Moor and Rebecca N. Moor, stated:

> The Union River was a great fishing and spawning ground for salmon. The Indians and early settlers speared them in the eddies and pools at the Falls. Later, after the dams were built, the salmon began to grow less. There was no fishways to allow them to ascend the River. *A large number of shad were also caught.* Alewives were caught on the river as they returned with the tide. The streams and branches of the Union River abounded in fur animals, and the Indians and a number of white men were engaged for years, hunting and trapping otter, mink, sable, [muskrat], bear and Lynx. A few beaver were also trapped. (emphasis supplied).[30]

Even fairly recent accounts recognized the abundant run of alosines that used to exist, noting that "[t]he Union River with nearly 32,000 acres of lake surface is reputed to have an abundant run well over a century ago (Atkins 1887) but today the stream is blocked by a 60-foot concrete dam at Ellsworth."[31]

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[27] Hall, C.J.; Jordan, A.; Frisk, M.G. 2011. *The Historical Influence of Dams on Diadromous Fish Habitat with a Focus on River Herring and Hydrologic Longitudinal Connectivity*. Landscape Ecology 26: 95–107 at 101, Table 1.

[28] Hall et. al footnote note 25 supra at 103, Table 2.

[29] Atkins, "The River Fisheries of Maine" 1887. Citing to " The Fisheries and Fishery Industries of the United States." George Brown Goode, 1887 at 705.

[30] Homey, Mark "*King Pine, Queen Spruce and Jack Tar"* Volume 1 at page 36 from an original account published in the Ellsworth American, December 26, 1900.

[31] *Restoration and Management of the New England Alewife Fisheries with Special Reference to Maine* by George A. Rounsefell and Louis D. Stringer. U.S. Department of the Interior, Fish and Wildlife Service, Cambridge, MA. Transactions of the American Fisheries Society. 1945. Vol. 73, pp. 394-424.

The pre-existence of this original population of shad would reverberate in subsequent historical accounts and legislative and municipal actions that sought to protect them in the face of increasing development in the watershed.

3. Beginning at least in the early 1800s, as construction of sawmill dams throughout the river was occurring in earnest, there was a call to build fishways at all mill dams on the Union River and its tributaries to protect access for shad, salmon and alewife to reach their historic spawning and rearing habitats.

In 1815, prior to Maine statehood, Massachusetts law recognized the presence of shad and imposed a fine for the construction of dams or obstructions preventing access to critical spawning habitat, stating:

> Sect. 1. Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, that if any person shall make or continue any dams, or other obstruction in or across Union river in the county of Hancock, or any stream or pond emptying into the same or into any part of Union river bay, northerly of the southern extremes of Newbury-neck and Oak point, through or into which Salmon, *Shad* or Alewives, have ever been accustomed to pass, for the purpose of casting their spawn, without providing and keeping constantly open and clear, a sufficient passage or sluice way, for such salmon, *shad* and alewives to pass and repass, from the tenth day of May to the last day of June annually, every such person shall forfeit and pay a fine not exceeding two hundred dollars, nor less than fifty dollars…[32] (italics added).

Later in the same year the citizens of Ellsworth voted that the Ellsworth Selectmen alter the law to preserve the species and limit the taking of those fish from streams and ponds upstream of the present day Ellsworth Dam site. The meeting minutes state:

> At a legal meeting of the inhabitants of the Town of Ellsworth qualified by law to vote in town affairs holden at said Ellsworth on the eighth day of May 1815. Voted that the Selectmen Petition the General Court in behalf of said Town for an alteration of the law for the Preservation of Salmon, Shad, Alewives in Union River & Bay and streams and Ponds entering into the same, that said Fish may be taken on two days each week. Whereas by the law passed for the Preservation of Salmon, Shad and Alewives in Union River & Bay and the streams and Ponds emptying into the same, the taking of said fish is prohibited for the term of three years, and whereas said Fish have increased so much that they may be taken at the stated times without any material detriment to their increase, the undersigned therefore in obedience to the vote aforesaid request your Honorable Body so far as the law aforesaid as to permit the taking of the fish aforesaid in the waters aforesaid two days in each week during the residue of the three years aforesaid.[33]

Then in January 1823, almost immediately following statehood, the Maine Legislature recognized the development of dams, principally for riverside mills, had occurred and was

[32] Massachusetts Laws, 1815, Ch. 129, enacted Feb. 27, 1815. Chap. CXXIX. *An Act for the preservation of Fish, in Union river and bay, and in the waters emptying into the same*. Section 1.
[33] Minutes of Ellsworth Selectmen, Mass. Archives, Boston, MA., May 8, 1815.

continuing, and enacted law requiring keeping sluiceways open for shad.[34] This was significant in that the Legislature was specifically enacting law to protect upstream spawning of shad and other species. It was also significant in that it marked the first time a Maine official was making a finding specific to shad and doing so in order to justify getting shad upstream. This legislation was in response to Petitions submitted by the Ellsworth Select Board to the Maine State Legislature earlier that year, again clearly evidencing an intent to protect fish access to upstream spawning habitat.[35]

The following year, the Ellsworth Select Board recognized the conflict between sawmills and upstream fish access, stating in Petition: "This lumber is sawed at the mills above Union River Bridge, and the fish, to wit, salmon, shad, & alewives, have now all the passageway they can have, unless the dam is cut down, as entirely to stop the mills during the time allowed by law for them to pass up the River." [36]

That same year, conflicts began to arise elsewhere upstream on the river between sawmill construction and the legally mandated time during spawning season to keep open a passageway for shad, salmon and alewives. An 1824 Petition of the Assessors, Plantations 26 and 27 responded to the construction of a dam and mill well upstream of the present Ellsworth Dam site (approximately 20 miles) noting that the only way salmon, shad and alewives could get upstream of that facility was through the dam that had been constructed. The Petition specifically stated:

> …that the Proprietors *built a mill & dam across the western branch of the Union River (at Mariaville Falls)* and erected mills thereon for the benefit and encouragement of the settlement, that they have given the use of said dam to the settlers, a privilege to build a gristmill thereon, to which they are accustomed to have all their sawing & grinding done, and they cannot [illegible] grinding or sawing at any other place within 20 to 25 miles, that the said dam is built in a place where the banks are ledgy and very high, and precipitous, *so much so that no passageway for salmon, or shad and alewives can be made except through the dam which would stop the mills during the time limited by law for keeping open the passageway…*[37]

4. Historical records and scientific research show that spawning and rearing for this large shad population occurred well upstream of the present site of the Ellsworth Dam.

Consistent with the legislative and municipal initiatives discussed above, other historical efforts on the Union River also spoke to an excellent fishery that had previously existed. Further

[34] Third Legislature *Special Laws of the State of Maine:* "An act making further provision for the preservation of Fish in Union river bay, and its waters." January 1823. Pages 299-300 of the Act required anyone constructing a dam to *keep open sluiceways for certain fish Including salmon, shad and alewives. (emphasis supplied).*

[35] Petitions from Ellsworth Select board to Maine Legislature, January 1, 1823. From Legislative Papers for Ch. 213 (1823) titled, "An Act in Making Further Provision for the Preservation of Fish in Union River Bay and its Waters."

[36] Petition from Ellsworth Select Board, January 13, 1824. The "Union River Bridge" being referred to is upstream of the present Ellsworth Dam site.

[37] Petition of the Assessors, Plantations #26 & #27, January 27, 1824. Note that Mariaville Falls is approximately 20 miles upstream of the present Ellsworth Falls Dam site.

emphasizing the once large size of the population and its range throughout the watershed, the Union River was very much a part of the efforts of Maine's first Fisheries Commissioner in the 1860s to require fishways to be built on all the major rivers in Maine.

In 1867 the new Maine Commissioners of Fisheries began a river by river investigation to evaluate species using the river, obstructions, and history of each river in order to fulfill the 1867 Legislature's "Resolve relative to the restoration of sea fish." This investigative work was continued in 1868 because they had not been able to analyze every river in the first year. The 1868 report included the Union River and in 1869 provided clear evidence of the previous existence of anadromous fishes including shad stating "[a]ll the dams in Ellsworth were examined. There are none that present unusual obstacles; the average height is ten feet. *The fishery on this river was formerly excellent, producing salmon, shad and alewives; but it has shared the common fate, and these species are now nearly extinct here.* The expense of constructing fishways and re-stocking the river would be comparatively small."[38] (emphasis supplied).

Similarly, ten years later, in 1878 a Hancock County survey stated: "In olden times *the most abundant fish in our rivers was the shad*, and next the salmon, …. Formerly Union river was a favorite haunt of salmon, shad, and alewives."[39]

The clear and undisputed evidence that shad existed before the Ellsworth Dam was constructed was even acknowledged by the then owner of the dam, the Bangor-Hydro Electric Company, in its 1987 FERC license application wherein Bangor-Hydro explicitly stated that "[b]efore dams were constructed the Union River supported anadromous Atlantic salmon (*Salmo salar*), alewife (*Alosa pseudoharengus*), and American shad (*A. sapidissima*)."[40]

5. Following the construction of the head-of-tide Ellsworth Dam, a remnant shad population remained below the dam, and their upstream spawning habitat was now inaccessible.

Although there had been several dams constructed during the 1800's which did in fact impede alsoine upstream access, the construction in 1907 of the head of tide hydroelectric dam at Ellsworth completed the elimination of shad access to their historical spawning waters upstream of the dam, stranding a residual population of shad below the dam. This residual population has been referred to in numerous accounts confirming their existence over the decades right up to the present day, often in the context of restoration goals and policies (discussed more thoroughly below).

The existence of upstream habitat for shad, and its potential for restoration was identified early on and repeatedly acknowledged. For example, almost sixty years ago the Maine Department of Inland Fisheries & Game in 1961 stated :

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[38] *Reports of the Commissioners of Fisheries of the State of Maine for the Years 1867 and 1868.* Augusta, Owen and Nash, Printers to the State. 1869 Second report at 5.

[39] A *Survey of Hancock County Maine:* Wasson, Samuel, at 41.

[40] Bangor Hydro FERC license, 1987 Fishery Resources Section at 8.

> Shad Potential and Value. The lifecycle of the shad is similar to that of the alewife, but the shad spawn in deep slowly moving water. *Much of the East Branch of the Union River appears to be good shad water …. we believe the Union River could produce about 15,000 shad annually….* Among the restoration problems listed for salmon, one in particular -- downstream passage at the Ellsworth Dam -- applies to alewives and shad."
>
> and
>
> "*Atlantic salmon, alewives, and shad originally ascended the Union River.* Dams have prevented anadromous fish from reaching any of the upstream lake and stream waters of the drainage since the early 1800's [sic]. Two dams, a 65-foot-high structure at Ellsworth and a 25-foot-high structure at Graham Lake, now prevent access to upstream waters." [41] (emphasis supplied).

Twenty years later, in 1982, a statewide fisheries plan was created by the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Marine Resources ("DMR"), the Atlantic Sea Run Salmon Commission. The plan contained tables of historic and current shad rivers in Maine, describing the type and size of fishery. The Union River at Ellsworth is *listed as both a historical shad river with a minor fishery with population numbers of 1,000-10,000 fish* and a *current shad river with remnant stock.*[42] Consistent with this acknowledgement, that same year the ASRSC listed American shad as an anadromous species in Union River.[43] Similarly, a 1989 environmental study of the Union River listed shad as occurring in the estuarine area of Union River downstream of the Ellsworth dam.[44] That same year the U.S. Department of the Interior's Fish and Wildlife Service identified the *Union River upstream of Leonard Lake for Proposed restoration of anadromous species, including shad.*[45]

The 2015 Union River Federal Coordinating Committee's Comprehensive Management Plan (described more fully below) also discussed the observation of the residual population:

> 3.1.3 American Shad
>
> "A residual population of American shad together with strays from other river systems are likely present in the Union River estuary below the Ellsworth Dam. *Shad have been observed incidentally in the commercial river herring harvest, by anglers, and historically by agency personnel tending the trap*."[46]

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[41] Havey, Keith A. *Union River Fish Management and Restoration.* Maine Department of Inland Fisheries & Game, February 1961. at 17, 22, and 27, and 32.

[42] *State of Maine Statewide River Fisheries Management Plan,* Department of Inland Fisheries and Wildlife, Department of Marine Resources, Atlantic Sea Run Salmon Commission. June, 1982 at '1-21' to '1-24'.

[43] *Union and Minor Coastal Drainages East of the Penobscot,* A River Management Report by the Atlantic Sea-run Salmon Commission, 1982 at 8.

[44] EIS from *Restoration of Atlantic Salmon to New England Rivers* at 57.

[45] Eipper, A., W. Knapp., C. Laffin. *Anadromous fish streams of New England: upstream migratory routes.* Portfolio NE-1. U.S.D.I. Fish and Wildlife Service.

[46] Comprehensive Fishery Management Plan for the Union River Drainage 2015-2017 at 14.

These findings are consistent with anecdotal accounts from as recently as 2018 confirming the presence of shad downstream of the Ellsworth dam. In 2018 DSF interviewed local fisherman Charles Kelly who stated:

> Well, I never precisely fished for shad. I was fishing more for stripers. I caught literally 100's of stripers and tagged them for American Littoral Society. *But, what few shad I caught were below the dam, salmon fishing*….Below the Ellsworth dam, salmon fishing with wet flies. And occasionally you would catch one. You would think it was a salmon cause they very strong in flight. But of course they never jumped. And um, I would land them and release them. And this all happened when we had salmon here, oh goodness back in the 1980's and early 90's we had a fair run of salmon in the river and that's when the shad, what few I was involved with, I caught…when I used to fish regularly I would catch usually 1 or 2 a year. Ah, but we never, we meaning two or three other fellas I talk with, ah there never seemed to be very many there. So at one time I wonder if there was a good shad run there? Like the salmon. I mean we had, we had salmon there. Of course a lot of those were put and take. So but, I've often wondered because down below the narrows on the Union River there's a couple of good, holes, deep holes there to catch stripers. And when I was tagging, I was bait fishing, I was interested in numbers. And even caught a couple of shad down there.[47]

Other reports continued to confirm the existence of this remnant, albeit increasingly depleted population. In 2014, DMR issued several maps and tables showing the Union River with shad habitat.[48] This was followed in 2015 by the Comprehensive Fisheries Management Plan (discussed below) for the Union River Drainage which stated: "*A residual population of American shad together with strays from other river systems are likely present in the Union River estuary below the Ellsworth Dam. Shad have been observed incidentally in the commercial river herring harvest, by anglers, and historically by agency personnel tending the traps.*"[49]

6. There is evidence shad are present below the Ellsworth dam now.

Just as in other watersheds where shad passage has been required by DEP, there is ample evidence shad are below Ellsworth now, albeit in highly depleted numbers. For example, despite the ineffectiveness of existing trap and truck fish passage for shad (discussed more fully below), in 2016 trap counts from DMR website screen captured on September 26, 2016 *listed shad as present in the Ellsworth Trap below the dam***.**[50]

It is not surprising that the shad population immediately below the Ellsworth Dam remains severely depleted, just as it was found to be on the Presumpscot by DEP in its 2003 certification review of S.D. Warren's dams. With no access to upstream spawning habitat on the Union for over a century due to the Ellsworth Dam, and being an opportunistic species known to

[47] Interview with Charles Kelly January 23, 2018.
[48] *Maine Department of Marine Resources American Shad Habitat Plan*. Maine Department of Marine Resources, Sea Run Fisheries Division. 2014. pg. 1, 2, 3, 21. http://www.asmfc.org/files/ShadHabitatPlans/AmShadHabitatPlan_ME.pdf.
[49] *Comprehensive Fisheries Management Plan for the Union River Drainage 2015-2017*. February 27, 2015 at 14.
[50] DMR website screen captured on 9/26/2016 at 11:33 AM.

seek available spawning habitat and leave one river system where there is none and migrate to another system where spawning is possible, a robust population of shad cannot be expected on the lower Union until access to suitable upstream habitat is available. This is further compounded by the fact that there is no evidence of spawning habitat immediately below the Ellsworth Dam, further removing any incentive for shad to remain there. There are simply too few habitat units downstream to rebuild the population or attract spawning shad.

This unfortunate circumstance is also exacerbated by the well-established science of climate change and anticipated rise in sea level. During the term of the Applicant's anticipated 40-year FERC license, this sea-level rise will have the effect of further increasing the salinity of waters immediately below the Ellsworth dam and further reducing any limited shad habitat that may arguably be there now.[51] This long time horizon underscores the importance addressing upstream shad passage immediately.

The good news, however, is that in addition to this residual shad population found by the agencies, DMR inshore trawl surveys conducted in the region from the period of time 2000-2018 clearly show the presence of this opportunistic species in their regional migratory path immediately below Ellsworth Bay.[52] The adjacent watersheds of the Narraguagus and Penobscot rivers also contain abundant shad populations and stray shad from those watersheds are expected to be present in the Ellsworth Bay area as well. Thus, shad are not extinct from the Union River watershed or region yet.

B. The historical and present existence of shad and the significant amount of upstream spawning habitat are acknowledged and uncontested by the applicant, its consultants and the state of Maine's resource agencies in connection with the current Application.

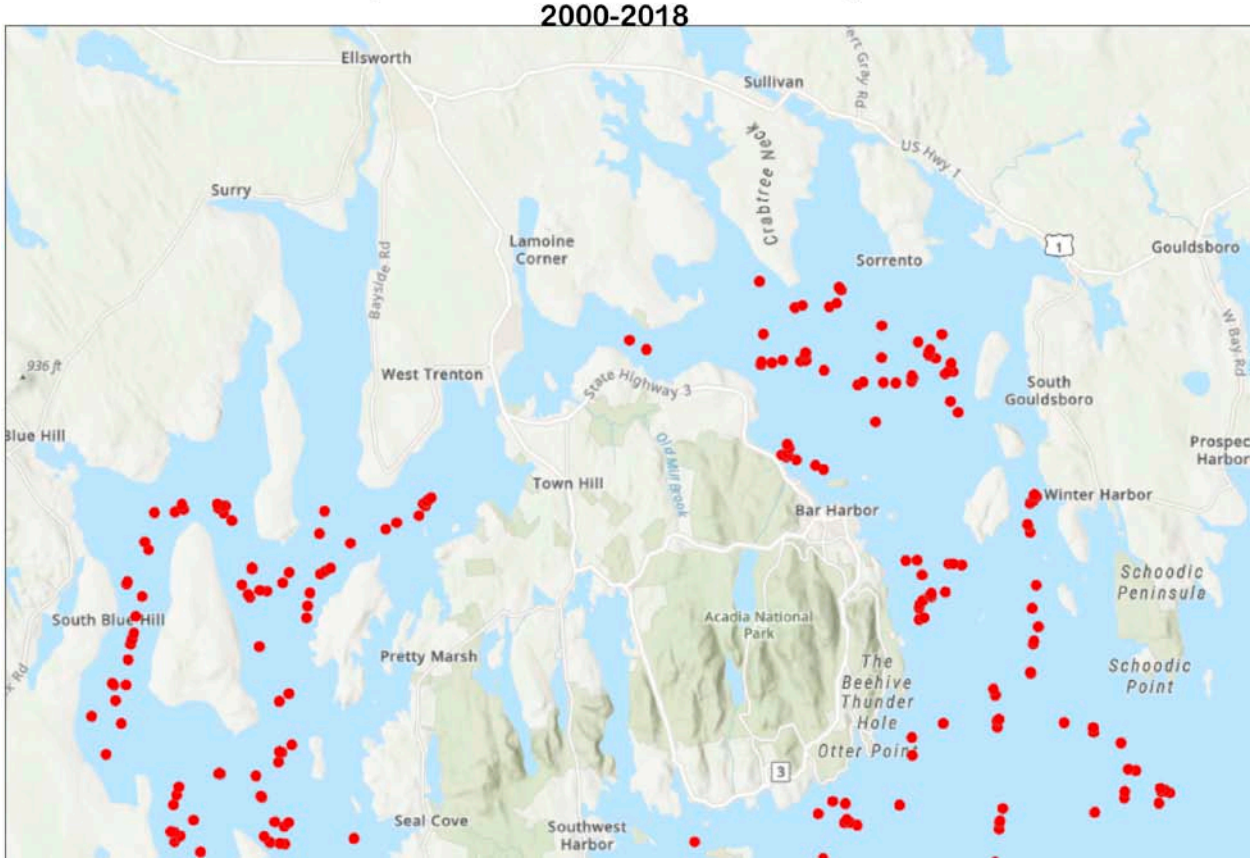
The Applicant and state and federal resource agencies do not contest the historical, indigenous presence of shad, the depleted, remnant population that exists there now, and the opportunistic shad populations in nearby watersheds. In documents filed in connection with the current Application, the Applicant as well as state and federal resource agencies all agree that the residual population of shad remaining in the lower Union River constitutes the foundation for species restoration and expansion. For example, in 2012, DMR noted that adequate upstream and downstream passage facilities might allow for the natural expansion of this population stating: "*Remnant populations of blueback herring and American shad existed below the Ellsworth dam in 2000* when the Plan was being developed. At this time there are no plans for active restoration

[51] *See e.g.* Lipski et al Evidence of Successful Spawning and Other Life-History Aspects of Alosa sapidissima (American shad) in the Penobscot River Estuary 2016 Northeastern Naturalist Vol. 23(3) 3677-377 at 371. From surveys of the Penobscot river the authors concluded that the presence of juveniles upstream of the salinity barrier below a head-of-tide dam must be present to conclude American shad can successfully spawn. There is no evidence of any spawning activity below Ellsworth dam and increasing sea levels will increase the salinity gradient below the dam.

[52] *See* Exhibit E, Trawl Survey map and data from Maine inshore trawl survey provided by Rebecca Peters. These surveys are ongoing and data is currently being collected for 2019. Note: DSF is also informed that the absence of data immediately below the dam for this survey is due to the survey not being conducted in close proximity to the dam.

Exhibit E: Maine Inshore Trawl Survey map and data provided by Rebecca Peters.

Maine DMR inshore trawl surveys near Union River Bay where American shad were caught. 2000-2018



of these species, but *adequate upstream and downstream passage facilities might allow natural expansion of these species*"[53] (emphasis supplied).

Applicant itself acknowledges the residual shad population, stating:

> Other Diadromous Fish—Based on past incidental occurrence in the commercial river herring harvest, occasional catch by anglers, and historic reports by agency personnel that used to tend the fishway and trap, *a residual population of American shad together with strays from other river systems is believed to exist in the Union River estuary below Ellsworth Dam.*[54]

The Applicant's opinion is consistent with various comments and observations filed by fisheries agencies during the licensing process to the effect that the residual shad population had been recognized as present and is suitable for restoration. For example, the U.S. Fish and Wildlife Service ("USFW") commented in the Draft License Application ("DLA") that:

> *The DLA does not address upstream or downstream passage requirements of American shad*. Page E-4-3 of the DLA notes that the *Federal Energy Regulatory Commission identified American shad as a resource that could be cumulatively affected by the proposed operation of the Ellsworth Project.* The Union River CFMP (section 3.1.3), as well as the previous Union River CFMP, identified American shad restoration as a management goal. American shad recovery on the Penobscot, Sebasticook and Kennebec Rivers indicate this feasible. The nearby Milford broodstock collection facility on the Penobscot River could provide a donor stock. The FLA should acknowledge this management goal and the possibility of implementing American shad restoration during the term of the license.[55] (emphasis supplied).

DMR reiterated in 2015 that fish passage for the residual population of shad should be considered in this Application stating: "The DLA correctly indicates there are no current plans for shad restoration. However, the new license will likely cover a 30 year period, and restoration priorities may change. *The potential for American shad passage should be considered*."[56] (emphasis supplied).

In recognition of the potential for the restoration of the shad population both the National Marine Fisheries Service ("NMFS") and USFWS commented on both the fact that the absence of broodstock would not prevent the restoration of shad (due to the successful restoration of shad on the neighboring Penobscot without the use of broodstock)[57] and that shad recovery in other watersheds indicated shad restoration in the Union River was feasible.[58]

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[53] Department of Marine Resources, Gail Wippelhauser letter to TRC engineers regarding shad, *Ellsworth Hydroelectric Project (FERC No. 2727) Notice of Intent to File License Application, and Pre-Application Document*, at 207.

[54] Application, December 30, 2015. Table E-8 page E-4-36 shad are listed in a table of species know to occur in Union River at page e-4-48.

[55] Application, December 30, 2015. Appendix E-2-11, NMFS comment 33 at page 352.

[56] October 6, 2015 Letter from DMR to FERC at 2.

[57] October 7, 2015, National Marine Fisheries Service's Comments on Black Bear Hydro Partners, LLC Draft License Application for the Ellsworth Project (FERC No.2727) —"Section 4.4.3.1, Fish and Aquatic Resources,

C. In recognition of its indigenous status and the threat to the remnant population, the state and federal resource agencies have set ambitious restoration goals for shad.

1. Federal and State agencies identified shad restoration goals early following the construction of the Ellsworth Dam.

DSF was able to locate a number of state and federal resource agency plans and goal statements which demonstrate clear and consistent state and federal resource agency desires to restore shad above Graham Lake and throughout the Union River watershed. These include:

- 1996: Union River Stakeholder Group establishes URFCC (discussed below);
- 2000-2005: URFCC annual adjustments;
- 2012: DMR correspondence with Applicant's consultant's stating that adequate upstream and downstream passage facilities might allow natural expansion of these species (discussed above); and
- 2015: URFCC, and CFM plan issued in 2015 (discussed below) with specific reach by reach goals for Union River shad.

a. The URFCC and its importance to shad restoration goals.

The establishment of ambitious Union River restoration goals for shad, in the form of a multi-stakeholder fisheries management plan formally began in 1996. This is when USFWS, state fishery agencies and other interested entities including the then owner and operator of the Ellsworth and Graham Lake dams[59] began discussions to attempt resolve the historical upstream (and downstream) fish passage issues that had remained at the Project, and also discuss how to manage the fishery resources in the Union River drainage. The initial management plan consisted of a description of the Union River drainage, its fishery resources, the status of its diadromous and resident fish populations, management goals and objectives for the drainage, and recommended measures and activities to be implemented by a Union River Fisheries

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Affected Environment, Other Diadromous Fish (Page E-4-43): The FLA should include a citation to support its claim that a lack of American shad broodstock prevents restoration of shad to the Union River. *The claim is contrary to the fact that a significant run of American shad that has been restored to the Penobscot River in Maine without the use of broodstock.* The run of American shad in the Penobscot River is a direct response to improved passage conditions in the lower river. Unless the Licensee's claim can be substantiated, it is simple supposition and cannot be used to support a license order."

[58] October 8, 2015: Letter from USFWS to FERC "The DLA does not address upstream or downstream passage requirements of American shad. Page E-4-3 of the DLA notes that the Federal Energy Regulatory Commission identified American shad as a resource that could be cumulatively affected by the proposed operation of the Ellsworth Project. The Union River CFMP (section 3.1.3), as well as the previous Union River CFMP, *identified American shad restoration as a management goal. American shad recovery on the Penobscot, Sebasticook and Kennebec Rivers indicate this feasible*. (emphasis supplied). The nearby Milford broodstock collection facility on the Penobscot River could provide a donor stock. The FLA should acknowledge this management goal and the possibility of implementing American shad restoration during the term of the license. "

[59] Original stakeholders included PPL Maine, FWS, Maine DMR, Maine Department of Inland Fisheries and Wildlife, Maine Atlantic Salmon Commission, City of Ellsworth, Maine Council of the Atlantic Salmon Federation, Union Salmon Association, and (unspecified) interested members of the public.

Coordinating Committee ("URFCC").[60] The plan identified issues that must be addressed through studies and other activities, including potential conflicts between restored and resident fish populations, in order to accomplish identified management objectives. The management plan initially focused on fish restoration for the period 2000-2005, with the understanding that it would be reviewed and adjusted annually. The management plan's overall goal is to manage all sport and commercial fish species in the Union River drainage (including shad) for optimum habitat utilization, abundance, and public benefit. To accomplish this, the watershed was divided into six subdivisions (reaches) and objectives were developed for objectives for each subdivision.

b. The 2015 Comprehensive Fishery Management Plan for the Union River Drainage and its importance to shad restoration goals.

In addition to the URFCC, a 2002 amendment of Article 406 of Applicant's 1987 FERC License required Applicant to file a Comprehensive Fisheries Management Plan ("CFM Plan")[61] for the Union River and to update the Plan every five years. Following the amendment, Applicant developed the CMF Plan in consultation with the URFCC. Recognizing the importance of the shad fishery, in subsequent amendments to the plan shad became an integral part of the reach-by-reach management plan for the Union River. For example, on February 27, 2015 Applicant filed with FERC its required annual report.[62] Included in the filing was an updated CFM for the Union River Drainage for 2015-2017 period (the "2015-2017 CFM Plan").[63] This plan was prepared by the Union River Fisheries Coordinating Committee and noted that the 2015 stakeholder group "…consists of state and federal fishery agencies, including Maine DMR; Maine Department of Inland Fisheries and Wildlife; and the U.S. Fish and Wildlife Service; as well as the City of Ellsworth; *Black Bear Hydro Partners, LLC*; Maine Council of the Atlantic Salmon Federation; Union Salmon Association; and interested members of the public".[64] (emphasis supplied).

The 2015 CFM Plan acknowledged the target species addressed by the plan and that "Migratory fish species include: American shad *Alsoa sapidissima,…*"[65] It also discussed specific shad management objectives:

> 4.4 American Shad Management Objectives 2015-2017
>
> DMR plans to focus its shad restoration efforts on rivers other than the Union during the period 2015-2017, including the Kennebec, Androscoggin, Saco, Penobscot, and St. Croix. There is also no convenient source of broodstock for the Union that would

[60] 2000-2001 Annual Report – Union River Fisheries Coordinating Committee. September 12, 2002.
[61] *See* PPL Maine, LLC 100 FERC ¶ 62,209 (2002).
[62] The document titled "Re: Ellsworth Project (FERC No. 2727); Article 406 Compliance; 2014 Annual Report-Union River Fisheries Coordinating Committee; Comprehensive Fishery Management Plan for the Union River Drainage 2015-2017."
[63] *Comprehensive Fisheries Management Plan for the Union River Drainage 2015-2017*, February 27, 2015 (the "2015 CFM Plan").
[64] 2015 CFM Plan at 2.
[65] Id. at 4.

> support an active shad stocking program. *Until such resources become available, management of shad in the Union River will be accomplished using measures implemented for other diadromous species, including the provision of interim and permanent fish passage and continuation of in stream flows at the Ellsworth Project.* Any action taken by the DMR regarding shad management in the Union River will be consistent with the mandatory compliance requirements of the IFMP for American Shad and River Herring."[66] (emphasis added).

The CFM Plan detailed specific reach-by-reach goals for the Union River:

> Section 5.5 Long Term Fisheries Management Goals and Objectives by River Reach: Migratory pathways for American shad identified in Reach I-IV. Reach II and IV managed for shad production. (Reach 1 Mouth of the river to Ellsworth Dam, Reach II Ellsworth Dam to Graham Lake Dam, including Branch Lake sub-drainage, Reach III Graham Lake Dam to confluence of West and East branch of the Union River and tributaries, Reach IV West Branch of the Union River)—page 26-27. Union River Fisheries Coordinating Committee. [67]

And beginning on page 26, in an eye-opening account of agency plans for shad migration and restoration, the Plan discusses reach-by-reach specific shad management goals for the Union River as follows:

> Section 5.0: Long Term Fisheries Management Goals and Objectives by River Reach.
>
> Reach I: Mouth of the river to Ellsworth Dam…
>
> 1. Manage Reach I as migratory pathway for Atlantic salmon, American shad, river herring, and American eels.
>
> 2. Manage river herring, American shad, American eel, and striped bass in accordance with the Atlantic States Marine Fisheries Commission's Interstate Fisheries Management Plans for these species.
>
> 3. Manage Reach I for sustained production of resident and diadromous (anadromous and catadromous) species consisted with habitat capabilities.
>
> Reach II: Ellsworth Dam to Graham Lake Dam, including Branch Lake sub-drainage.
>
> 1. Manage Reach II (main stem) as migratory pathway for Atlantic salmon, American shad, river herring, and American eels.
>
> ….

[66] Id. at 24.
[67] 2015 CFM Plan at 26.

3. Manage Reach I (main stem and Branch Lake Stream) for sustained production of brook trout, Atlantic salmon, American shad, river herring, and American eels consistent with habitat capabilities.

Reach III: Graham Lake Dam to confluence of West and East Branch of the Union River and tributaries.

1. Manage Reach III as migratory pathway for Atlantic salmon, American shad, river herring, and American eels.

Reach IV: West Branch of the Union River.

1. Manage Reach IV as migratory pathway for Atlantic salmon, American shad, river herring, and American eels.

2. Manage Reach IV for sustained production of wild brook trout, Atlantic salmon, American shad, river herring, American eels, and other resident species consistent with habitat capabilities.[68]

It is especially noteworthy that Applicant itself also recognized these goals by incorporating the URFCC shad assessment into its Application.[69] Further, the goal established for Reach 1 of the Union River, the stretch of river immediately downstream of the Ellsworth dam is designated a "migratory pathway" for shad and *not* spawning habitat.

It is also important to note that these 2015 goal statements were developed after DEP issued its 1987 water quality certification for the Project, and thus a few years after DEP was last able to assess whether the state water quality standards were being achieved, making now the first time that DEP has had the opportunity to focus on these goals and incorporate their import into the current certification process.

In summary, it is abundantly clear from this history and record that since at least 1996 it has been the stated and reaffirmed goal of DMR and federal fishery agencies -- and the dam owner itself -- to restore American shad above the Ellsworth and Graham Lake dams, acknowledging their native, indigenous history and how depleted the population has become with the absence of fish passage. These ambitious objectives and goals for the restoration of shad are definitive and to DSF's knowledge, undisputed.

D. State and federal restoration goals for shad cannot be met without upstream volitional passage.

Although the URFCC establishes state and federal resource goals and objectives for the restoration of shad, these goals depend entirely on the residual shad population in the Union combined with opportunistic shad populations throughout the area being able to reach historic spawning areas upstream of the location of the Ellsworth dam, where good shad spawning

[68] Id. at 26.
[69] *See* Application at E-4-60 to E-4-62.

habitat exists,[70] and eventually the equally good shad spawning habitat upstream of the Graham Lake impoundment.[71] The extent of available spawning habitat is also apparently not in dispute.[72]

Thus, the agency goals will never be achieved with the non-existent measures for shad passage proposed in the Application. First, it is not disputed that the current trap and truck upstream fish passage operation at Ellsworth is neither safe, timely nor effective in moving shad above the Ellsworth Dam. The agencies know this to be true, and the Applicant's own consultants have acknowledged this.[73] Second, absent access to spawning habitat above the Ellsworth Dam, the shad population is forced to rely on the essentially non-existent spawning habitat existing in the lower reach of the Union River below the dam which, as explained above is wholly inadequate to restore the population.

E. Maine's water quality laws and established DEP precedent require the Applicant to immediately construct and then operate safe, timely and effective upstream and downstream passage for indigenous American shad at its Ellsworth Dam, with phased passage required at its Graham Lake Dam.

As noted above, nowhere in the Application does the Applicant propose to construct and operate safe, timely and effective passage for American shad. Notwithstanding the fact that: (1) shad are a statutorily-defined and therefore protected indigenous species; (2) this species once populated the waters of the Union River and its tributaries in quite significant numbers far

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[70] *See* 2015 CFM Management Goal for Reach II quoted in the text above. This habitat has been significantly improved with the recent removal in 2019 of the Branch Lake Stream Dam in the riverine section of Leonard Lake.

[71] *See* 2015 CFM Management Goal for Reach II quoted in the text above.

[72] There appears to be some confusion regarding a map used as a source for shad habitat delineation. The map in question appears to be incomplete and inconsistent with well established and current scientific research. In Eipper, A., W. Knapp., C. Laffin. 1982. Anadromous fish streams of New England: upstream migratory routes. Portfolio NE-1. U.S.D.I. Fish and Wildlife Service, nearly all of the Union River (including reaches in the upper river well above the Leonard and Graham Lake dams) is listed as "proposed for restoration" for multiple sea run species, including, specifically American shad. The map contains the statement that "[s]treams highlighted on this map *were identified by the State as having present or future capability to support runs of anadromous fish*. This potential also exists in other waterways not yet surveyed or designated by the State. For additional information, contact the State agency identified on this map." (emphasis added). The Eipper et al. (1982) source map plainly states that *all* of the data in the map for Maine was provided "by the Maine Department of Marine Resources." Later in 2014 DMR produced a Maine shad habitat map for the ASMFC that only lists the current usage of the Union River for American shad -- and this shows the habitat ending ambiguously near the mouth of Branch Lake Stream, upstream of the Ellsworth dam, from this map Applicant and DMR claim that this current habitat is the entirety of shad, however sources for the 2014 DMR map lead back to the original Eipper et al. 1982 which contain no numerical or other delinations of shad habitat.

[73] In the HDR Upstream Passage Alternative Fish Studies (HDR Report), Applicant's consultant in Section 4.0 of that report, "Lift Alternatives" generally, but particularly pages 43-44, Applicant's states that the current fish passage in place is not providing safe, timely and effective passage for shad: "For American shad, *the existing fishway*, as well as the two salmon ladder alternatives with separation of sorting and transportation upstream, would function *with low to moderate effectiveness*." At 43-44. (emphasis added) Section 4.0 also discusses that while various steep pass and denil ladders that are conceptually designed earlier in the document would work well for salmon and herring, it is the volitional lift option design they propose which "with proper entrance hydraulics, American shad passage effectiveness would be high." HDR goes on to state that the proposed lift would work fine for salmon and herring.

upstream of the Ellsworth Dam; (3) this population was decimated when the Ellsworth and other dams were constructed on the Union River without fishways in the 19th and 20th centuries; (4) the Applicant's trap-and-truck passage is a complete failure in passing shad to their native waters; (5) larger, opportunistic shad populations are present and spawning in immediately adjacent rivers and are present in the regional migratory pathway; and (6) not only state and federal fisheries agencies but the Applicant itself have stated that a remnant shad population has hung on and exists in the lowermost reaches of the river and have further established shad restoration beyond both the Ellsworth and Graham Lake dams as state and federal goals; the Application is entirely silent on what the Applicant proposes to do to address these circumstances.

Such silence can only be interpreted in one way: the Applicant must believe that it bears neither a legal obligation nor a moral duty to address the devastating impact that its hydropower project has caused and continues to cause to American shad in the Union River. As currently proposed, the Application threatens to not only make unachievable the state and federal agencies' reach-by-reach shad restoration plan (*e.g.*, the 2015-2017 URFCC and 2015 CFM Plan), but would also make it impossible for the State of Maine to achieve state water quality standards protecting designated uses for anadromous shad upstream of the Ellsworth Dam.

Fortunately for the health of the Union River and its fisheries, when faced with Applicant's silence, Maine's water quality laws - *as developed and applied by DEP and vigorously defended by the Office of the Attorney General over the last fifteen or more years* - has not been silent, and indeed has developed a clear response to the Applicant's omission. And the response is this: unless there is a rational, *fisheries-tethered* basis for not installing safe, timely and effective passage, a hydropower owner must do so at its project to allow access by an indigenous species to its spawning and rearing habitat to rebuild its remnant population once these species have access to the waters below the project. Otherwise, an application for certification of a project resting in Class B waters fails to meet the designated uses and narrative criteria of 38 MRSA §465(4) and cannot be approved.

1. To meet the requirements of state water quality law, DEP has the authority to order installation of upstream and downstream passage for indigenous species as part of its water quality certification.

Thirty-two years ago, in 1987 when DEP last reviewed whether the operations of the Ellsworth and Graham Lake dams met state water quality standards, it is fair to say that the legal question of whether state water quality law required the owner of a hydropower project to install upstream and downstream passage at its dam(s) in order to allow passage for an indigenous species to reach its native spawning and rearing habitat had not been clarified by Maine's Supreme Judicial Court (the "SJC"). However, in the ensuing thirty-two years since the Union River dams were last certified, any uncertainty around this issue and around DEP's authority to order fishways as a condition of water quality certification has evaporated. Beginning in 1991 with the Court's decision in *Bangor-Hydro-Electric v. Board of Environmental Protection,*[74] and then culminating in the SJC's decision (upheld by the U.S. Supreme Court) upholding DEP's and

[74] *See Bangor-Hydro-Electric v. Board of Environmental Protection,*595 A.2d 438 (1991).

BEP's 2003 requirement of phased fishways in the Presumpscot River certification[75] – *a decision based on circumstances strikingly similar to those encountered today on the Union River* -- any prior question of whether the designated uses and narrative criteria contained in 38 MRSA §465(4) provide DEP with the authority to order the construction of fish passage as part of certification has been removed.

2. To remain consistent with the precedents DEP established since 2003 on other rivers, DEP must require the Applicant to install upstream and downstream passage for American shad at the Ellsworth Dam immediately because there is no barrier to shad access below Ellsworth Dam.

As discussed above, the legal question of *whether* DEP has the legal authority under Maine law to order the Applicant to install upstream and downstream passage for American shad in the circumstances found today on the Union River is not in doubt; it is well settled law that it does, and DSF is not aware that the Applicant is challenging this authority. What the Applicant does appear to be testing, by its refusal to propose immediate construction and operation of shad passage at Ellsworth, is whether DEP is prepared to apply to the Union River the Department's own precedents regarding the *timing of when passage must be installed* - precedents on timing that were established in certifications on the Presumpscot River, and recently reinforced on Cobboseecontee Stream.

Agency decisions (beginning with the Presumpscot certifications in 2003) have granted delays to dam owners in constructing fish passage for indigenous species at dams that lack such passage *if a rational, fisheries-based reason existed for granting a delay*. In the 2003 Presumpscot certifications, S.D. Warren was required to install upstream passage at the Saccarappa dam to pass indigenous American shad, blueback herring and Atlantic salmon, but only two years after one or more of these indigenous species were physically able to access the waters at the base of the Saccarappa dam following the construction of fish passage at the downstream Cumberland Mills dam. This exact same DEP approach – requiring the installation of upstream passage for indigenous anadromous fish at a particular dam but delaying its required installation until these fish could gain access to the waters immediately below the dam – was the rationale used for establishing the timing of installing required upstream passage in DEP's recently issued American Tissue Certification.[76] For S.D. Warren's other Presumpscot River dams included in the 2003 relicensing (those upstream of Saccarappa) the trigger for installing certification-ordered fish passage was rationally different but also fisheries-tethered: by first providing a small, remnant shad (and blueback herring) population with access to large amounts

[75] *S.D. Warren Company v. Board of Environmental Protection*, 2005 ME 27, 868 A.2d 210 (2005) ("S.D. Warren I"); *S.D. Warren Company v. Board of Environmental Protection*, 547 US 370 (2006) ("S.D. Warren II"). In S.D. Warren I at 442, the Court concluded that the narrative criteria at 38 M.R.S.A. § 465, which requires waters "of sufficient quality to support all indigenous fish species," was intended to be an integral part of the water quality standards for the BEP to consider. The Court also concluded, based upon the specificity of the designated uses at 38 M.R.S.A. § 465, that the Legislature's purpose for the language "suitable for the designated uses" was "that the designated uses actually be present." The court also stated that when those uses are not presently being achieved, the Legislature intended the quality of the water be enhanced so that the uses are achieved. (internal citations omitted)

[76] *See* American Tissue Certification at 33-36.

of first-in-river spawning habitat above Saccarappa (through construction of the Saccarappa fishway), the immediate legal need for access to meet state and federal fisheries objectives had been achieved and additional fish passage at S.D. Warren's upriver dams could be delayed until the population began to rebound and required access to habitat upstream of those dams as well.

The "facts-on-the-ground" for the Union River, as presented in Sections IV. A-D above, are identical to those presented to the DEP in 2003 before it issued its Presumpscot certifications.

- For both rivers, historical records presented during the Presumpscot certification process and in this certification process demonstrated that shad were indigenous to and historically had access to the waters upstream of the Presumpscot and Union River dams for which certification was requested;

- For both rivers, DMR found that remnant shad populations survived in the lowest reaches of each river and would re-colonize their historic habitat if provided access;

- For both rivers, DMR had established as a goal and policy the restoration of shad in each river;

- For both rivers, effective upstream passage for shad at the lowermost dam(s) blocking access to this spawning habitat was/is non-existent;

- For both rivers, spawning habitat for shad in the river below these lowermost dams was insignificant; without access to habitat upstream of the blocking dams, restoration goals could not be achieved; and

- For both rivers, spawning habitat for shad immediately upstream of the first dam for which certification was being requested (Saccarappa and Ellsworth) is substantial and when utilized will begin the restoration of shad and the meeting of state goals and policies.

On the Presumpscot River, in response to these facts-on-the-ground, DEP ordered upstream shad passage be installed immediately at Saccarappa *once shad gained physical access to the base of the dam following the construction of a fishway at Cumberland Mills*. On the Union River, *there is no dam blocking shad access to the base of the Ellsworth Dam*. Consistent application of principles enunciated by DEP on the Presumpscot (and defended by DEP to the U.S. Supreme Court) means that immediate upstream shad passage is required at the Ellsworth Dam, pursuant to state water quality law. The DEP's recent *American Tissue* certification underscores this precedent. There, the DEP ordered the owner to install passage as soon as the dam downstream of American Tissue currently blocking anadromous fish from appearing at the base of the American Tissue dam is removed.

F. Although DEP has discretion in determining the timing of when fish passage for indigenous sea-run shad must occur, there is no rational basis for departing from its past precedents and not ordering the Applicant to immediately design, install and then operate upstream passage for shad at the Ellsworth Dam.

While DSF acknowledges that the SJC has given DEP discretion in determining *when* safe, timely and effective passage for indigenous fish must be installed so as to meet water quality standards, a rational basis consistent with established precedent must underpin its determination. That rational basis must be derived from the both the Class B standards and the broad public purposes set forth by the Legislature in 39 MRSA §464. Here, a rational basis for departing from established DEP precedent and delaying installation of upstream shad passage at the Ellsworth Dam does not exist, making any such departure arbitrary and capricious.

Below DSF presents the possible reasons that DSF has encountered that purport to justify the absence of immediate upstream passage for shad at Ellsworth (and therefore a deviation from established DEP precedent), with each presented reason followed by DSF's explanation as to why the reason is not rational. As is apparent from this analysis, none of these potential explanations provide a rational basis to wait on providing shad passage into available upstream habitat. The rationale and rebuttal are as follows:

Rationale:

- *"Shad may never have passed above the Ellsworth Dam; the falls there might have been too steep and therefore shad are not indigenous to the Union River above the Ellsworth Dam."*

DSF response:

This is not accurate because:

(1) Historical records presented in these comments beginning in the early 1800s show *just the opposite*. These documents demonstrate significant efforts to require fishways on dams upstream of Ellsworth to protect and restore the shad and salmon runs, including efforts in the 1860s by the first Maine Commissioner of Fisheries. No documents have been found or presented that suggest that shad were not able to pass above Ellsworth.

(2) If shad were not indigenous to the waters above the Ellsworth Dam, why have state and federal agencies established the goal of *restoring* shad to upstream waters in the Union River? Are the agencies proposing to *introduce* a non-native anadromous fishery into the Union River?

(3) If shad were not indigenous to the waters above the Ellsworth Dam, how could a significant shad population have existed according to historical records, if all the productive shad spawning habitat on the river is upstream of the Ellsworth Dam?

Rationale:

- *"The shad population below the Ellsworth Dam is very small, and we should wait until the population grows before requiring upstream passage."*

DSF Response:

The fishery agencies and even the Applicant agree that a residual, remnant population of shad exist at the mouth of the Union River.[77] Crucially, this shad population finding is *identical* to what DMR found to be the situation for shad on the Presumpscot River in 2001. Nonetheless, DMR advocated for immediate upstream passage at Saccarappa once shad had physical access to the base of that dam, and then progressive passage at upstream dams then owned by S.D. Warren. In its "*Draft Fishery Management Plan for the Presumpscot River Drainage"* on which DEP's 2003 certification decision requiring upstream passage for shad was significantly based, DMR wrote:

> Historically, the Presumpscot River supported large numbers of migratory fish. These included both anadromous species (alewife, American shad, Atlantic salmon, blueback herring, rainbow smelt, striped bass) and catadromous American eel….However, construction of dams without fishways by European settlers, documents as early as 1739, interfered with the movement of migratory species….Over the next decade, the fishways fell into disrepair or were destroyed by high water and not replaced, and runs of anadromous fish were not reported in the Presumpscot River after 1900….The lower reaches of the Presumpscot River currently support a run of anadromous alewives *and a remnant population of American shad* and perhaps rainbow smelt and tomcod.[78] (emphasis supplied).

The reason for DMR's 2001 position calling for upstream passage at Cumberland Mills and the Saccarappa to begin restoration of this "remnant" shad population on the Presumpscot, and the reason DEP embraced it in its certification, are both obvious and highly rationale: *but for passage upstream, the goals of restoration could not occur*. DMR consistently stated back then, and continues to find that shad are an opportunistic spawning species which will not appear or rebound in significant numbers until spawning habitat is available.[79] This is consistent with other sources that reach the same conclusion.[80] Recent scientific evidence establishes that a robust resident population is not needed for restoration, only the proximity to watersheds that have abundant populations.[81] Here, both the Penobscot and Narraguagus watersheds are adjacent to

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[77] *See* Section IV, A subsections 2-6 and B above.

[78] *Draft Fishery Management Plan for the Presumpscot River Drainage*, Prepared by Gail Wippelhauser, Thomas Squiers, Maine Department of Marine Resources, Francis Brautigam, Maine Department of Inland Fisheries and Wildlife, and Norman Dube and Paul Christman, Maine Atlantic Salmon Commission, December 2001, page 4.

[79] *See e.g.* Operational Plan for the Restoration of Diadromous Fishes to the Penobscot River July, 2009.

[80] Hasselman, D.J., Lindberg K.E., (2012) *Alosine Restoration in the 21st Century: Challenging the Status Quo*, Marine and Coastal Fisheries: Dynamics, Management and Ecosytems Science 4:1 174-187 "salient point is that American shad will utilize upstream spawning habitats if suitable passage is provided."

[81] Pess, G.R, Quinn, T.P., Gephard S.R., and Saunders, R., (2014) *Re-colonization of Atlantic and Pacific Rivers by Anadromous Fishes: Linkages Between Life History and the Benefits of Barrier Removal* Rev. Fish Biol. Fisheries, "If a vacant stream is located between two streams with strong runs of the targeted alosine species, re-colonization

the Union and can augment the depleted, residual population with strays from both rivers and be a source for potential broodstock.

Rationale:

- *"Allowing shad to pass upstream would mean Atlantic salmon could also pass upstream before safe downstream passage for salmon is in place."*

DSF response:

This is not true. Requiring the installation of a sorting facility at the exit of any upstream fish passage facility designed to capture salmon and control their upstream migration is both routine technology and routinely done in Maine. Salmon could be sorted and their destination determined by state and federal fishery agencies. In fact, there would be a number of advantages to Atlantic salmon restoration from immediate construction of a fish passage facility separate from the current trap-and-truck facility.

Further, getting shad into upstream waters as soon as possible is beneficial to salmon, as these shad will provide some protection from cormorants and other smolt predators to downstream migrating salmon smolts.[82]

Rationale:

- *"Allowing shad to pass upstream right now, before downstream passage has been altered to make it safe, would expose shad to the same inadequate downstream passage as currently experienced by salmon, with the same harmful results."*

DSF response:

This reasoning inappropriately lumps the spawning and lifecycle behavior of shad with that of salmon. Instead, the appropriate comparison is with alewife restoration on the Union

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may occur without reintroduction." The Union River is located between the Penobscot and Narraguagus, both having strong runs of shad.

[82] In addition to the benefits shad offer as prey buffer to salmon smolts, their necessary presence to salmon restoration has been recognized under the Endangered Species Act (16 USC 1531 *et. seq*) ("ESA"). The depletion of diadromous species such as shad are in the 2019 recovery plan (page 11) as a secondary stressor on recovering associated with ESA "factor E" specifically the threat of "depleted diadromous fish communities" as part of the "co-evolved suite of diadromous fish" beneficial to salmon recovery. ESA delisting criteria (page 32 – 2w) also addresses secondary threats stating that: "co-evolved diadromous species are restored to extent necessary to provide resources and ecosystem functions." Further, under the 2018 *U.S. Fish and Wildlife Service and NMFS Recovery plan for the Gulf of Maine Distinct Population Segment of Atlantic salmon (Salmo salar),* recovery actions, page 35, Section C5.0 states that a specific action is to: "Implement connectivity projects that ensure access to the co-evolved suite of diadromous fish that are part of the ecosystem Atlantic salmon depend on." (*e.g.* alsoines and eels). The Downeast Salmon Habitat Restoration Unit (SHRU) further lists the depletion of diadromous species in the Union River as general threat D20.2 (Ellsworth Dam and adverse effects to critical habitat); Specific overarching threat DES2.0 and action DES2.1 "seek out opportunities at dams and road crossings throughout the SHRU where access can be improved for diadromous fish….". *See also* Pess *et al* note 79 supra, discussing the roles of alosines as a prey buffer for emigrating Atlantic salmon smolts and other ecosystem benefits.

River, wherein DMR has not shown any reservation in pushing for massive upstream alewife passage at the Ellsworth Dam (via the trap and truck program) in order to restore the alewife population, notwithstanding the ongoing downstream mortality to a portion of the alewife caused by the Ellsworth Dam. For salmon, while some delay is necessary so that safe, timely and effective downstream passage can be constructed to avoid illegally taking a listed endangered species by turbine entrainment (although DSF respectfully disagrees with a fifteen-year delay), shad are not listed as threatened or endangered so entrainment does not trigger ESA compliance. Further, shad have far greater fecundity than salmon, much closer to alewife, meaning that shad produce far more juveniles than salmon with a higher survival rate provided the appropriate operational measures are put in place to minimize entrainment. Their restoration can survive an initial period with the same downstream passage measures in place for alewife. Shad, like alewives, are indigenous and the same rationale that was originally used to justify the installation of passage for alewives also applies to shad, the essential difference being that they do not use the same type of passage.

Rationale:

- *"Stating that it lacked resources to commence an active upstream shad stocking program in the Union River, DMR's comments to FERC did not recommend upstream passage for shad."*

DSF response:

DSF appreciates DMR's resource constraints, and its decision to focus its limited active shad stocking and management resources on much bigger rivers in which shad already have access to spawning habitat. However, what might constitute a rational DMR decision by a natural resource agency trying to prioritize where it wants to allocate publicly-funded staff and dollars does not constitute a rational basis for DEP to not follow precedents that are based on state law. DSF would remind DEP that notwithstanding the absence of an active DMR shad stocking program on the Presumpscot to enhance the remnant shad population there (in 2003 or today), DEP nevertheless ordered immediate fish passage at Saccarappa as soon as shad had access to it, paid for by the owner. In short, the absence of an active stocking program was not a rational basis to defer fish passage on the Presumpscot and should not be one on the Union either.

Rationale:

- *"DEP's water quality certification should not go beyond the requirements contained in FERC's Final Environmental Assessment"*

DSF response:

The very essence and purpose of the certification process delegated to states and set forth in Section 401 of the Clean Water Act, as repeatedly found by the federal courts and the SJC,[83] is

[83] *See* note 2 supra.

to grant to the State of Maine the opportunity to ensure that any project requiring a federal license will operate in compliance with state water quality law. Simply put, the law is clear that DEP's water quality certification authority is a way for the state to control its own destiny in state water quality matters.[84] Over the last twenty-five years, Maine has taken this responsibility quite seriously, ensuring that the water quality of the state and the fisheries that depend on this quality are protected.

The principal governing law that FERC applies in reaching its decision on the conditions that FERC believes should be contained in a hydropower license – the Federal Power Act – has decidedly different decisional criteria. In determining the conditions that will be included in a hydropower license, the Federal Power Act[85] requires FERC to reach an appropriate "balance" between "non-development" issues (meaning fisheries, recreation, aesthetic, historical) and "development" issues (meaning maximizing the generation of hydropower in the most cost-effective way for the applicant). Such balancing can mean that certain environmental concerns are downplayed or sacrificed by FERC for the sake of ensuring maximum hydropower generation.

By contrast, while DEP has the discretion in applying the fish passage requirements of state water quality law as discussed above, DEP understands that it does not have the authority to *de facto* ignore or waive the narrative criteria and designated uses aimed at the protection of aquatic habitat and indigenous fisheries. Maximizing the designated use of hydropower by perpetuating the decimation of the population of indigenous shad, and therefore rendering impossible the achievement of state fishery goals for the Union River is not contemplated by state water quality law.

G. DSF proposes a phased, measured approach to ensure minimal fish passage requirements are met.

With respect to upstream and downstream anadromous fish passage generally, there is convincing evidence in the record that the Union River historically supported natural populations of American shad, alewives and Atlantic salmon throughout the project area watershed.[86] The 2015-2017 URFCC and 2015 CFM Plan represent State and Federal natural resource agencies development of a plan to restore these species, specifically shad to the river. Further, the current trap and truck upstream fish passage, even at maximum effectiveness, will not be utilized by shad. They will still not be able to timely access upstream habitat even if all of the effectiveness measures in the FERC Final Environmental Assessment are adopted.

Once volitional upstream shad passage is available at the Ellsworth Dam, DSF believes the phased installation of appropriate anadromous fish passage facilities at Graham Lake will also be necessary and appropriate to allow access for the shad to spawning and nursery habitat upstream of the impoundment, as contemplated in the agencies' reach-by-reach plan. Thus, the appropriate phased installation of upstream and downstream anadromous fish passage facilities, suitable for shad passage at both dams will provide access to significant habitat for shad and is

[84] S.D. Warren v. Board of Environmental Protection, 547 U.S. 370 (2006) (S.D. Warren II).
[85] *See e.g.* 16 USCS §797.
[86] See discussion in Section IV above

necessary to ensure that the Project waters will be suitable for the designated uses of fishing and habitat for fish, and of sufficient quality to support all species of fish indigenous to those waters.[87]

1. At the Ellsworth Dam.

With respect to the specifics of upstream and downstream shad passage, DEP should order the Applicant, as part of the conditions of certification, to immediately commence consultation with state and federal fishery agencies to determine the appropriate design for a upstream shad passage at the Ellsworth Dam, followed by a DEP-controlled approval process and then implementation no later than three years after the FERC license is issued. Regarding this design, the report prepared by Applicant's consultant HDR and made part of its application - *Upstream Fish Passage Alternatives Study"* [88] - should constitute the starting point for this consultation.[89] In this report, HDR concluded that "For a volitional lift option, with proper entrance hydraulics, American shad passage effectiveness would be high," whereas "For American shad, the existing fishway, as well as the two salmon ladder alternatives with separation of sorting and transportation upstream, would function with low to moderate effectiveness."[90] Further guidance for consultation regarding a specific habitat-triggered phased approach can be found by reference to the Presumpscot Water Quality Certification prescription.[91]

Assuming the recommendations of the Applicant's consultant is followed, the Ellsworth fish lift would need to be sized to handle the shad restoration potential for the Union River, although it could be built in two phases with a second phase expanding the initial lift capacity once the population has rebounded to a certain number of fish and the capacity of the phase one lift exceeded. As previously noted in these comments, a sorting and counting facility at the exit of the fish lift should be part of the design, to allow for the removal of Atlantic salmon until safe, timely and effective downstream passage for this endangered species has been put in place and verified.

Regarding downstream shad passage, the Applicant should be required to install and operate downstream passage facilities designed to pass shad at the Ellsworth Dam in a safe, timely and effective manner, based on consultation with state and federal resource agencies. These facilities should be operational concurrent with the completion of upstream shad passage facilities at Ellsworth or within two years following notification by the DMR of sustained stocking of shad above the Ellsworth Dam, whichever comes first.

[87] *See e.g.* 2003 BEP decision on appeal.
[88] *Upstream Fish Passage Alternatives Study,* Prepared by HDR Engineering, Inc., Portland Maine, December 2015.
[89] *See generally e.g.* The phased approaches used in the Presumpscot and American Tissue Water Quality Certifications.
[90] *Id.*, at page 44.
[91] *See* April, 2003 *In the Matter of S.D. Warren Presumpscot River Hydro Projects, Maine Water Quality Program, Federal Clean Water Act, Water Quality Certification* at 14-16.

2. **At the Graham Lake Dam.**

DSF believes once upstream shad passage is installed at the Ellsworth Dam, the phased installation of appropriate upstream shad passage facilities at Graham Lake should be triggered later, after the count for shad in the now-installed upstream passage facility at Ellsworth reaches a certain number. This certain number of shad should be determined using the same approach that DMR has applied elsewhere (*e.g.* the Presumpscot), with the number of shad spawning habitat units occurring between Ellsworth and Graham Lake estimated by DMR, the total number of shad required to "occupy" or use these habitat units then tabulated, and a percentage of that total shad number – previously 20% -- becoming the trigger number requiring installation of shad passage at Graham Lake. Downstream passage at Graham Lake would be designed and triggered in exactly the same manner as for the Ellsworth Dam.

In sum, unless there is some dispute as to the elements DSF has painstakingly researched and can demonstrate, there is no rational basis for delay. Accordingly, DEP can regulate beyond FERC's prescription as required by state law, acting consistently here with the way the DEP has acted in other similar-situated watersheds. **Absent a truly legitimate (vs. contrived) reason *that is tied to fisheries restoration policy for the river*, there is no legally-acceptable reason for DEP to abstain from ordering the phased construction of safe, timely and effective upstream and downstream passage for shad, beginning immediately**.

V. ADDITIONAL DOWNSTREAM PASSAGE MEASURES MUST BE CONTAINED IN THE WATER QUALITY CERTIFICATION IN THE EVENT THAT EXISTING AND NEWLY-REQUIRED DOWNSTREAM PASSAGE MEASURES ARE NOT EFFECTIVE, IN ORDER TO REASONABLY ASSURE THAT WATER QUALITY STANDARDS WILL BE MET

DSF believes that there are two remaining significant issue that remain inadequately addressed in the context of the Application relating to ensuring that downstream passage of diadromous fish through the project does not violate water quality standards. These two issues are: (1) ensuring safe, timely and effective downstream passage for eels, namely through the use of "deep gate" passage; and (2) ensuring safe, timely and effective downstream migration of both eels and anadromous fish forced to pass downstream via the spillway at the Ellsworth Dam, through installation of a plunge pool.

1. Observed eel mortality due to turbine entrainment during seasonal migration is not being satisfactorily addressed by Applicant's operational effectiveness measures.

There is no data on whether and to what extent Applicant's proposed downstream fish passage effectiveness measures will continue to cause mortality to out-migrating American eel – mortality from turbine entrainment that has been repeatedly documented by DSF and not denied by the Applicant. FERC's FEA recommendations emphasize turbine shutdowns and trashgate

improvements to address the issue of downstream passage eel mortality.[92] Although conceptually the model of operational shutdowns may be effective, there is no proposed study or data gathering pre-issuance of the water quality certification by DEP, that will demonstrate the efficacy of these measures. Simply put, there is a self-evident problem inherent in eel passage: if eels are effectively prevented from entering turbines and cannot go downstream over the spillway (see discussion of plunge pool below), they are left with only two options for downstream for downstream spawning: the existing, and potentially "improved" surface fish passage or, for those eels deeper in the water column, the temporary eight-hour turbine shutdown during September and October. There is no proposal in the Application to demonstrate how effective either option will be.

Accordingly, the Water Quality Certification must contain terms and conditions requiring Applicant to demonstrate, subsequent to issuance of the certification and FERC license and using data from three consecutive out-migrating seasons with study design approved by DMR and DEP that downstream passage for American eel at Graham Lake and at Ellsworth is 90% effective, consistent with FERC's FEA recommended downstream fish passage effectiveness measures and those measures DMR has used at other dam locations.[93] This data should include an Applicant-conducted 3-year study to determine the exact timing of the generation shutdown, so as to result in the optimum benefit for downstream eel migration.

If, following this three-year study, Applicant cannot demonstrate to DEP that it is meeting this downstream performance standard after implementing the downstream eel passage requirements of the Water Quality Certification, no later than one year after the submittal to DEP of this passage data Applicant must submit to DEP, after consultation with DEP and DMR, a technical/engineering analysis of where a deep gate would be placed in the Graham and or Ellsworth dams that will reduce mortality to American eel migrating downstream. This technical/engineering analysis would account for the unique characteristics of the Project and variety of factors that may affect the efficacy of deep gate passage (*e.g*., water velocity regimes at various depths. If Applicant contends or can demonstrate that deep gate passage at one or both dams would be ineffective, Applicant must provide alternative passage design that will achieve the downstream eel passage performance standards.

[92] *See* FEA at 338, "Staff recommends ceasing operation from 8pm to 4am from September 1 to October 31 for 3 and for 3 consecutive nights following each large rainstorm in August and operate the existing downstream fish passage facilities....with additional measures for testing the effectiveness of the new facilities." And at 348, 360-361.

[93] For example, *see* May 15, 2009 *Next Era Energy Maine Operating Services letter to Kimberly D. Bose, Secretary FERC regarding Kennebec River Diadromous Fish restoration Annual Reports, Kennebec River Hydro Developers Group (KRHDG), Ft. Halifax (FERC 2552), Lockwood (FERC 2574), Shawmut (FERC 2322), Weston (FERC 2325), Hydro-Kennebec (FERC 2611), Burnham (FERC 11472), and Benton Falls (FERC 5073)* at page 2 citing DMR comments regarding Shawmut downstream eel passage and specific deepgate, operational shutdowns and overlay screening requirements stating "DMR's goal is to achieve 90% upstream and downstream passage efficiency at each hydropower dam for each species."

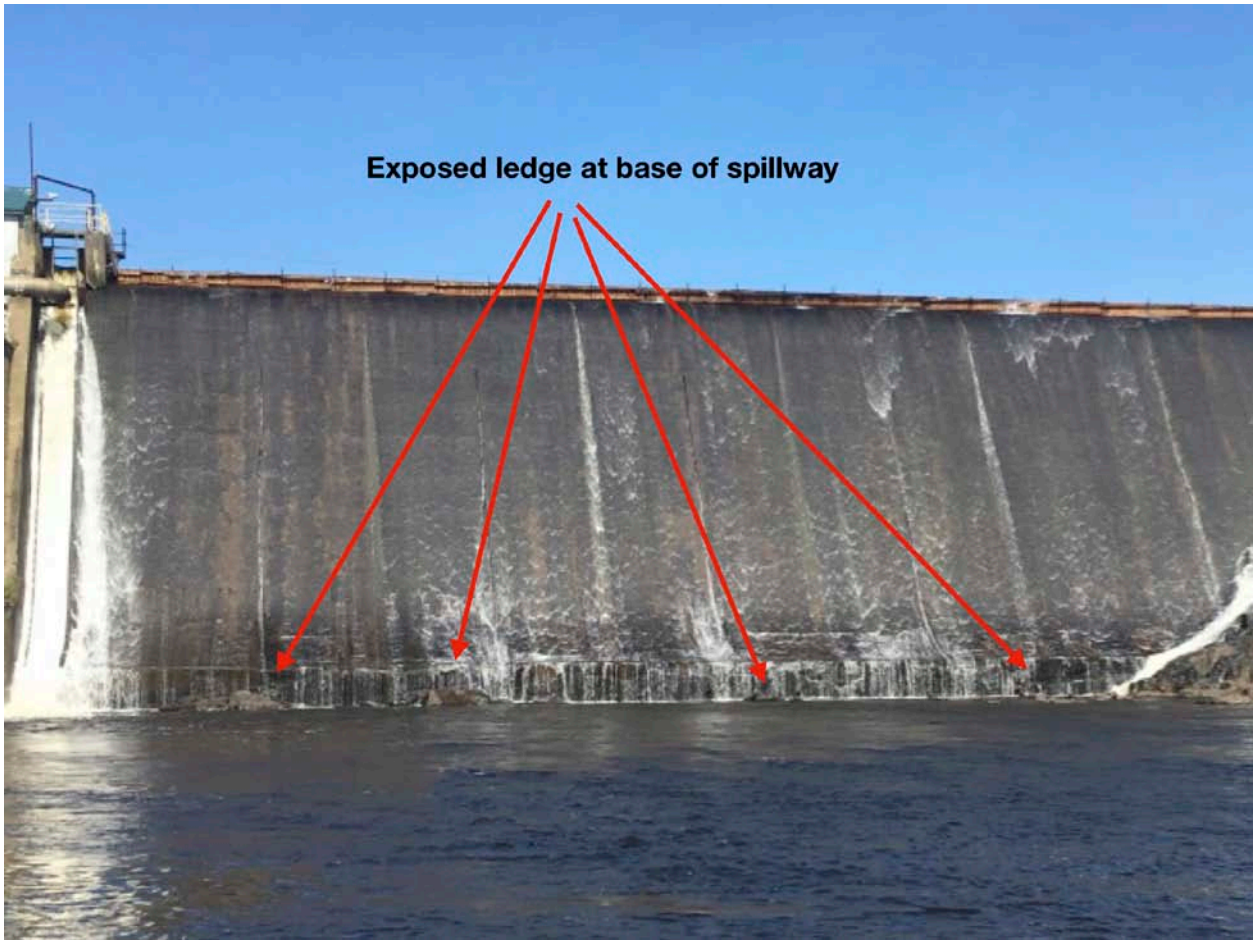
2. There is no data to substantiate Applicant's assertion that a 12-foot plunge pool exists at the Ellsworth Dam.

On October 10, 2018, in response to FERC Staff's request for additional information, Applicant stated that it did not have drawings of the river bed at the base of the dam spillway that would enable the Applicant to confirm the depth of the natural plunge pool, but that "the minimum depth of the plunge pool appears to be several feet with a potential depth of approximately 12 feet." [94] DSF has observed the Ellsworth Dam at low tide and photographed the exposed dam apron and rocky shoals that are present where a 12 foot plunge pool is alleged by the Applicant to occur.[95] From these observations and photographs, DSF has concluded that there is nothing but exposed bedrock where this plunge pool allegedly exists; there is no natural plunge pool existing at the toe of the dam and no proposal to install one. This absence will cause increased fish and eel mortality during spillway or overflow conditions because fish and eels will drop 60 feet over the dam to contact exposed bedrock. *This situation will become acute during the ordered turbine shutdowns recommended in FERC's FEA.*

As a result of Applicant's representations, none of FERC's terms and conditions address safe, timely and effective passage for fish or eels over the spillway and no new measures were included in the Application. To address this apparent inaccuracy and to allow DEP to ensure that safe, timely and effective passage for diadromous species migrating over the spillway, DSF contends that DEP is legally required to include in the certification the following requirement: if after all the downstream passage measures for alewife, eel and other sea-run fish contained in the FERC license and DEP certification are in place and it is observed that fish and eels are still migrating over the spillway, then Applicant *shall be required construct* a plunge pool at the base of the Ellsworth Dam, following design consultation with DEP and DMR.

[94] Cite to FEA response to FERC inquiry. FERC relied on this unproven assertion repeatedly in the FEA.
[95] *See* Exhibit F.

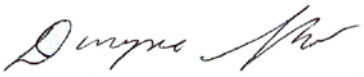
Exhibit F: Photograph of the Ellsworth dam a low tide indicating exposed bedrock at apron of dam.



CONCLUSION.

DSF asserts that: (1) absent any assurances of future compliance with numerical dissolved oxygen and macroinvertebrates, that the water quality certificate be denied; (2) absent a rational basis for delay, upstream and downstream volitional passage for indigenous American shad is required immediately; (3) in the event DEP issues a certification with terms and conditions that can ensure these existing water quality violations are corrected, that these terms and conditions also include (i) a limitation of no greater than a 4.5 foot water drawdown range for Graham Lake; (ii) the installation of a plunge pool at the base of Ellsworth Dam; (iii) the installation of deep gate eel passage at the Ellsworth Dam; and (iv) consistent effectiveness measures and testing to provide reasonable assurances of future compliance. In the alternative, the proposed Application will not be able to meet the relevant and applicable state Water Quality Standards required for certification and should be denied.

Respectfully submitted by the undersigned this 6th day November, 2019.



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