

REVIEW OF APPLICATION FOR CERTIFICATION OF WEST DUDLEY HYDROELECTRIC PROJECT

This report provides review findings and recommendations related to the application submitted to the Low Impact Hydropower Institute (LIHI) by West Dudley Hydro, LLC (Applicant) for Low Impact Hydropower Certification of the West Dudley Hydroelectric Project (the Project) on the Quinebaug River in the town of Dudley, Massachusetts. FERC granted the Project an exemption from licensing on June 10, 1983 as Project No. 7254. The Project has an average annual production of 969,000 kWh. The current exemptee assumed ownership from A&D Hydro, Inc. on May 8, 2008.



Figure 1. Location of the West Dudley Hydroelectric Project.

The LIHI application was deemed complete and publicly noticed on April 7, 2011. Several sets of comments related to recreation were received during the notice period, which ended June 7, 2011. Additional comments were received from the Rivers Alliance of Connecticut on August 15, 2011.

Background

Construction of the Quinebaug River Pond Dam (also called the Rhode Island Cardboard Company Dam) was completed in 1919 at the village of West Dudley about 2.2 miles upstream of the Massachusetts-Connecticut state line (see Figure 1). The Quinebaug River is a major tributary of the Shetucket River, which combines with the Yantic River in Norwich, Connecticut to form the Thames River 15 miles upstream of Long Island Sound in New London, Connecticut.

The West Dudley Power Company filed a notice of exemption from licensing of a small hydroelectric project for the West Dudley Hydroelectric Power Project on May 2, 1983. Federal Energy Regulatory Commission (FERC) granted an exemption from licensing on June 10, 1983.

The powerhouse, with an installed capacity of 310 kW, is flanked by two spillway sections, 55 feet and 114 feet in length and 17 feet high on average. The spillways carry flashboards four feet in height, raising the headpond elevation to 381.8 feet msl (top of boards).¹ The tailwater elevation is 369 feet msl, providing a gross head of 13 feet. The headpond has a surface area of 31 acres.

The brick-and-masonry powerhouse contains three turbine generators. Unit 1 consists of a modified Medsker brand turbine with a belt driven induction motor. It is a fixed blade Kaplan style that develops 95 kW of power. Unit 2 is also a modified Medsker brand turbine with a belt driven induction motor. It is a fixed blade Kaplan style which develops 120 kW of power. Unit 3 is a Flygt brand submersible unit with a direct-coupled planetary gearbox and induction generator. It is an adjustable blade Kaplan style with output of 95 kW. The total water flow through the project at full operation is approximately 500 cfs.

Two other hydroelectric projects are located downstream on the Quinebaug River in Putnam, Connecticut. One of the Putnam projects, Putnam Hydro, was certified by LIHI in 2002 and recertified in 2007. LIHI also recently certified the Mechanicsville Hydroelectric Project on the French River, a Quinebaug River tributary in northern Connecticut.

The U.S. Army Corps of Engineers (USACE) has done extensive flood control development on the mainstem as well. In 1965, it completed construction of the West Thompson Flood Control Dam about ten miles downstream of the Project. Upstream of the Project, it constructed two flood control dams: Westville Lake Dam (100 square mile drainage area) and East Brimfield Dam (68 square mile drainage area), completed in 1962 and 1960, respectively.

¹ The original notice of exemption indicated that the flashboard height was two feet. This and the headwater/tailwater elevations were corrected through an amendment of exemption application filed by A&D Hydro, Inc. on January 21, 1994.

LIHI Criteria Review

Under each of the issue sections that follow, I include a table that contains the related LIHI questionnaire response by the applicant and my analysis and conclusions. I also include any comments received from the public or resource agencies.

General Conclusions and Recommendations. I recommend that the facility be conditionally certified for the standard period of five years. The facility maintains true run-of-river operation consistent with terms set under the FERC exemption; however, it does not maintain records, and I am recommending a condition below that requires record keeping sufficient to verify flow compliance. There are no known listed T&E at the site. Recreational access is available with no fees, and the Applicant has agreed to cooperate regarding expressed public interest in improvements in padding access and local trail initiatives. No outstanding cultural resource issues are apparent in the record. The watershed protection criteria do not apply, and there is no watershed enhancement fund that would qualify the facility for extension of the certification term by three years. While the Massachusetts Department of Environmental Protection (MassDEP), for the purposes of the LIHI review, states that it is reasonably assured that the Facility complies with state water quality standards and does not contribute to an existing impairment of the Quinebaug River, I recommend a condition below that will verify, based on sampling ongoing this summer, MassDEP's preliminary conclusion. With respect to compliance with the fish passage criterion for diadromous fish, the Applicant will be working with the Massachusetts Division of Fisheries and Wildlife (MassWildlife) to enhance the passage of eels at the site, particularly downstream passage at this time; I recommend that the certification be conditioned to have downstream passage provided by the 2012 passage period. I could identify no other issues related to LIHI criteria. The Project will meet all LIHI criteria in the reviewer's opinion if subject to the conditions recommended below.

Issue 1. The Facility does not maintain records for monitoring compliance with the flow management requirements of the exemption.

Recommended Condition No. 1. West Dudley, LLC shall develop a system for maintaining records sufficient to demonstrate compliance with the headpond elevation and flow management limitations set forth under the terms of the FERC exemption and the MassDEP letter of July 8, 2011. Within three months of the date of issuance of the certification, West Dudley, LLC shall provide LIHI with a written flow management plan that outlines the systems in place to properly manage flows and headpond levels and to produce compliance records. Prior to filing the plan, West Dudley, LLC shall obtain plan approval from U.S. Fish and Wildlife Service and MassDEP ("agencies"); written confirmation of the approvals will be filed with the plan.

Issue 2. Insufficient dissolved oxygen data is available upon which to make a determination that the Facility does not cause or contribute to a violation of water quality standards.

Recommended Condition No. 2. West Dudley, LLC shall complete its Summer 2011 water quality sampling and provide the data to MassDEP for a determination as to whether the Facility complies with dissolved oxygen standards. The data report and MassDEP's determination shall be filed with LIHI no later than December 31, 2011.

Issue 3. The Facility does not provide effective downstream eel passage.

Recommended Condition No. 3. Within six months of the date of issuance of the LIHI certification, West Dudley, LLC shall enter into, and provide LIHI with a copy of, an agreement reached between the U.S. Fish and Wildlife Service, the Massachusetts Division of Fisheries and Wildlife, and West Dudley, LLC for providing safe, timely, and effective downstream passage for American eel, including terms governing any operational modifications, such as increased spillage during outmigration, and measures to prevent trashrack impingement and entrainment; the final design of facilities, their construction, operations, and maintenance; and the implementation schedule for design, installation, and operations. Such facilities shall be in place and operational by August 1, 2012, and West Dudley, LLC shall notify LIHI within two weeks of completion. During the term of this certification, should a resource agency request implementation of upstream passage at the Facility, West Dudley, LLC shall so notify LIHI within 14 days and provide LIHI with a copy of the request and its response.

Flows

The project is operated as a run-of-river facility with no storage manipulation and is responsible for maintaining a continuous minimum flow of 76 cfs or the inflow to the reservoir, whichever is less, for the protection and enhancement of aquatic resources in the Quinebaug River. The drainage area at the site is approximately 152 square miles. According to an email of June 7, 2011 from the applicant's representative, flashboards are only maintained in place when inflows exceed 160 cfs; during reinstallation, one unit is operated at 80 cfs while the headpond is restored to full operating level, which is normally no less than one inch below the top of the boards. The low-end capacity of the station is 40 cfs; when flows recede below 40 cfs, the station is taken off line and all flows are spilled.

The U.S. Fish and Wildlife Service (USFWS), by letter dated April 26, 1983, set the minimum below-project flow at 76 cfs as an approximation of the unregulated August median flow for the river at the site. The Massachusetts Division of Water Pollution Control in an April 26, 1983 letter indicated that it did not anticipate any violation of applicable water quality standards based on the project description, which included run-of-river operation "off the top of the dam" and "no alteration of the dam height, no change in pondage, no dredging, and no construction activities in the water."

As part of its LIHI filing, the Applicant provided a letter dated March 16, 2011 from Dr. Caleb Slater, Anadromous Fish Project Leader, MassWildlife, commenting on the application. Dr. Slater states, "Given the configuration of the project, with the turbines discharging at the base of the dam, there is no bypass reach and no need for minimum bypass flows."

FERC eLibrary contains a FERC NY Regional Office inspection report from May 2001 that noted a history of run-of-river operation problems at the Facility. It indicated that equipment repairs and software upgrades had rectified the problems.

On December 5, 2003, Russ Cohen, Massachusetts Riverways Program, filed a complaint with FERC regarding fluctuating flows below West Dudley and associated degradation of aquatic habitat. A&D Hydro responded (February 11, 2004) that, while it does not operate out of storage for enhancement of power production, some fluctuations do occur either due to USACE operations at upstream Westville Flood Control Dam or due to the fact that two of the turbines at West Dudley are of fixed geometry and the third variable unit (which could normally be used as a bridge to reduce fluctuation) often was out of service. The exemptee provided data from the USGS gage at Westville Dam to substantiate his case. FERC eLibrary did not have a full copy of the exemptee's response letter, and my attempt to get a copy from the current owner was unsuccessful as the owner does not have a complete file. FERC completed its investigation and determined that the failure to operate run-of-river would not be considered a violation of the exemption, based at least in part on a finding that the environmental damage was minimal as the deviation shown in the USGS data was not substantial. FERC also noted that the exemptee's practice of "burping" the trashracks to remove debris is contrary to the run-of-river requirement to the extent it fails to maintain downstream flows equivalent to inflow. This practice must have been discussed in the missing part of the exemptee's response. It is noteworthy that FERC considers run-of-river operation to be an exemption requirement and not just the 76 cfs minimum flow.

FERC eLibrary did not contain any indication of flow violations subsequent to the 2003 incidents.

The Applicant also provided a copy of a letter dated March 7, 2011 from Robert Kubit, P.E., MassDEP. In his letter, Mr. Kubit requested certain documentation to show that flow management is consistent with the terms of the exemption and therefore not causing or contributing to violations of water quality standards.² The exemptee, however, was unable to document compliance as continuous flow and headpond elevation records are not maintained at this project (email from Applicant representative, August 19, 2011, appended).

As discussed below under *Water Quality*, MassDEP qualified its conclusion that the Facility does not violate water quality standards by stating that such compliance is only assured if the Facility meets certain conditions to which the exemptee has agreed (letter of July 8, 2011). Included is this condition related to record keeping:

The Project owner is to maintain hourly recordings of pond levels in the Project impoundment which would be available to any interested party on request. Pond levels will be maintained within the 2 inch band below the height [sic] of the flashboards. The current height of the four foot flashboards is 381.25 ft. m.s.l.

The USFWS, by email of August 15, 2011 (appended), also recommended that LIHI certification be conditioned on record keeping:

² Mr. Kubit cites documentation of habitat degradation (substrate embeddedness and undercut banks) in the report *Ecohydrology of the Quinebaug River* (Parasiewicz, 2004) and MassDEP's Water Quality Assessment reports from 2001 and 2004-08 for the Quinebaug and French rivers.

Operations and Flow Monitoring Plan – [The exemptee] should develop a formal plan detailing the existing equipment used to monitor and record project generation and verify compliance with run-of-river operation (in consultation with FWS and MA).

Based on these recommendations and the fact that the Applicant does not now maintain records that can be used to demonstrate compliance with the LIHI flow criteria, I recommend that LIHI certification be subject to Recommended Condition #1:

LIHI Questionnaire: Flows	
A.1	<p>Is the Facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches?</p> <p>Applicant Response and Explanation: Yes The applicant described the watershed and the exemption requirements.</p> <p>Related Public Comments: None.</p>
	<p>Reviewer Analysis/Conclusions: The Resource Agency Recommendations are from 1983. This subcriterion only applies when the recommendations are from or after 1987. N/A = Go to A2</p>
A.2	<p>If there is no flow condition recommended by any Resource Agency for the Facility, or if the recommendation was issued prior to January 1, 1987, is the Facility in Compliance with a flow release schedule, both below the tailrace and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or “good” habitat flow standards calculated using the Montana-Tennant method?</p> <p>Related Public Comments: None.</p> <p>Reviewer Analysis/Conclusions: Caleb Slater (MA Fisheries and Wildlife), in his March 16, 2011 letter, indicates that the project is configured such that there is no bypass. Consequently, the Facility meets the Flow criterion under A.2, as the Facility is operated run-of-river with a minimum flow of 76 cfs (USFWS summer ABF). To assure compliance, Recommended Condition #1, which requires on-site record keeping, should be adopted. YES (subject to Recommended Condition #1)</p>

Water Quality

Because this project was granted an exemption by FERC, there is no state water quality certification. As mentioned above under *Flows*, the Massachusetts Division of Water Pollution Control in an April 26, 1983 letter indicated that it did not anticipate any violation of applicable water quality standards based on the project description. FERC did not do a NEPA environmental assessment. Consequently, there is limited information on water quality impacts considered at the time of original project review.

As part of the LIHI application process, the Applicant solicited a letter from MassDEP confirming that the Facility does not cause or contribute to violations of water quality standards. In its response letter of March 7, 2011, MassDEP, in addition to requesting certain flow information as discussed above, noted that there was insufficient data on dissolved oxygen (D.O.) concentrations to reach a conclusion regarding compliance with D.O. standards and asked that a sampling study be completed. Specifically, MassDEP requested D.O./temperature sampling under pre-dawn conditions during the low flow season of July – September, including reservoir profiles. MassDEP approved the sampling plan by email on March 30, 2011 and sampling is currently underway.

Although MassDEP requested this information, the Applicant and MassDEP subsequently reached agreement on a set of conditions that would enable MassDEP to conclude that the Project would not be expected to cause or contribute to violations of water quality standards if operating in compliance with these conditions. MassDEP's letter of July 8, 2011 is appended and addresses flow management; compliance monitoring; fish passage; and reservation of rights to modify conditions. The agreement is not a regulatory requirement, but MassDEP indicated, by email of August 3, 2011 (appended), that it would report non-compliance to the Massachusetts Department of Energy Resources, which administers the Commonwealth's Renewable Energy Portfolio Standard Program, and would oppose LIHI recertification. Since the conditions did not relate to compliance with D.O. standards, I sought and received confirmation that MassDEP is reasonable assured that D.O. standards will be met. The sampling results will be used for confirmation purposes. Consequently, I have recommended a condition (see p. 3) for following up on this issue after this summer's sampling has been completed.

The Quinebaug River in the Project vicinity is listed as a Category 5 water (impaired in need of a TMDL) in the 2008 303(d) list. There are two segments involved as shown in the following table.

Table 1. 2008 303(d) listing.

Segment ID	Description	Pollutant
MA41-03_2008	Southbridge WWTP, Southbridge to West Dudley Impoundment, Dudley. 2.2 miles.	-Nutrients -Organic enrichment/Low DO -(Other habitat alterations*) -Pathogens -Taste, odor and color -(Objectionable deposits*)
MA41-04_2008	West Dudley Impoundment to Connecticut state line, Dudley. 2.2 miles.	-Pathogens

The proposed 2010 303(d) list continues to include these segments as Category 5 with essentially the same impairment causes. It is noteworthy that the segment upstream of the dam is listed for enrichment and low D.O. concentrations, but this characteristic is not carried to the downstream segment. This summer's sampling will hopefully verify that significant D.O. deficits that occur upstream are limited to periods when the Facility is off line due to flows lower than the

minimum unit capacity of 40 cfs (0.26 csm). Under such conditions, all flows are spilled and benefit from reaeration. D.O. is the key issue; the Facility would not contribute to bacteriological contamination. (The Connecticut Department of Environmental Protection (CDEP) also lists recreational use of the upper Quinebaug River as impaired by pathogens, but no other impairments that could be associated with the Facility.)

LIHI Questionnaire: Water Quality	
B.1	<p>Is the Facility either: a) In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or b) In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?</p> <p><i>Applicant Response and Explanation:</i> Yes to (b) The Applicant referred to the March 7, 2011 letter from MassDEP; however, in its letter, MassDEP reached no conclusion relative to compliance with water quality standards and instead requested certain flow information and data from water quality sampling upon which to base a determination.</p> <p><i>Related Public Comments:</i> None.</p> <p><i>Reviewer Analysis/Conclusions:</i> The Project does not have a water quality certification. This criterion is met if Recommended Condition #2 for certification is adopted. YES to (b) (subject to Recommended Condition #2) = Go to B.2.</p>
B.2	<p>Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?</p> <p><i>Applicant Response and Explanation:</i> No</p> <p><i>Related Public Comments:</i> None.</p> <p><i>Reviewer Analysis/Conclusions:</i> The Quinebaug River is listed by MassDEP both upstream and downstream of the Facility dam, and by CDEP below the state border (bacteriological contamination). YES = Go to B.3.</p>
B.3	<p>If the answer to question B.2 is yes, has there been a determination that the Facility is not a cause of that violation?</p> <p><i>Applicant Response and Explanation:</i> None</p> <p><i>Related Public Comments:</i> None.</p> <p><i>Reviewer Analysis/Conclusions:</i> While the Facility does not contribute to use impairments associated with bacteriological contamination, it may influence D.O. concentrations. MassDEP has stated that is reasonably assured that the Facility does not cause or contribute to violations of water quality standards. The results of this summer's water quality study will be used to make a final determination. YES (subject to Recommended Condition #2) = PASS</p>

Fish Passage and Protection

Restoration of diadromous fish to the Shetucket River Basin follows *The Plan to Restore Diadromous Fishes to the Shetucket River Watershed* (CDEP, Inland Fisheries Division, December 2009). Historically, alewife and blueback herring (collectively, “river herring”), American shad, sea lamprey, American eel, and sea-run trout accessed spawning and nursery habitat in the basin; however, access was eliminated due to the construction of dams in the mid- to late-1800s. Migratory runs upstream as far as at least Cargill Falls in Putnam, Connecticut are well documented. The Inland Fisheries Division believes that Cargill Falls may have been the upstream limit of shad and river herring runs, but that Cargill Falls, in its natural condition, was unlikely to be an obstruction to salmon, sea lamprey, and eel. American eel continues to be well distributed in the Quinebaug River basin, including the mainstem upstream of West Dudley. Atlantic salmon is not targeted for restoration at this time, although the other species are.

The restoration plan indicates that the lowermost dam on the Quinebaug River, the Tunnel hydroelectric dam, has passage facilities in place, including an eel pass. Shad and river herring are moved upstream and have access to 7.5 miles of the Quinebaug (from mouth upstream to Aspinook Dam, which is 24 miles downstream of the French River). The plan, which is referred to as a “living document” subject to revision over time, only targets eels for restoration on the Quinebaug River upstream of Cargill Falls, targeting the full length of the river to the Massachusetts border. Although there is no specific restoration plan for the Massachusetts portion of the basin, MassWildlife is interested in protecting and enhancing the small eel population in the upper basin.

Both MassWildlife (letter of April 25, 1983) and the USFWS (letter of April 26, 1983) reserved authority to prescribe fish passage during the exemption proceeding; however, no prescriptions have been issued to date. MassWildlife considers downstream eel passage to be a present need, but defers on upstream passage until more progress is made in providing upstream passage facilities at the Connecticut mainstem dams and/or data on increased numbers of juvenile eels reaching Massachusetts. Referencing the series of emails in the appendix, the CDEP expects that upstream passage facilities at Cargill Falls and the next upstream dam will include capture of eels and transport to strategic upstream areas in the basin. The West Thompson flood control dam is currently being assessed to determine the extent to which it is a barrier to upstream movement. If it is not a significant barrier, eels that are released into the mainstem north of Putnam will have unimpeded access as far upstream as West Dudley. CDEP recommends that upstream passage at West Dudley be planned when the number of eels passing through the Cargill Falls facility reaches 100. If the flood control dam is a significant barrier, trapped eels can be released upstream of the flood control reservoir to achieve unimpeded access to West Dudley. Again, while upstream passage can be deferred, downstream passage is a present need and should be accommodated for LIHI certification. Eels are known to move upstream past the existing barriers at least in small numbers. MassWildlife has survey data with adult American eels from a mainstem site upstream of the Dexter Russell dam in Southbridge. The Dexter Russell dam is about 4.5 miles upstream of the Project dam.

In its exemption letter of April 25, 1983, MassWildlife notes that the river is heavily stocked with trout and “strongly recommend[s] that [the exemptee’s] trash racks and/or screens be placed

and spaced at a distance to adequately prevent stocked trout from passing thru...” According to MassDEP’s letter of July 8, 2011, the spacing between the trashrack bars is 1.75 inches. The letter was not specific as to whether this is the on-center spacing or the clear space between bars. In a telephone conversation on August 22, 2011, the Applicant’s representative stated that the clear spacing has been checked and is 1.5 inches. The current exemptee has no record demonstrating that the racks were modified to protect stocked trout from entrainment. Given that, the Applicant’s representative consulted with MassWildlife as to the adequacy of the current clear spacing and obtained the appended September 8, 2011, email from Caleb Slater, MassWildlife, stating that the 1.5-inch clear spacing is sufficient for larger stocked fish (Appendix, pp. A-15 to A-16).

For the purposes of preventing entrainment of outmigrating silver eels, MassWildlife recommends a maximum clear spacing of 0.75 inch (letter of August 2, 2011 to the Massachusetts Department of Energy Resources). Based on the telephone conversation of August 22, the Applicant is willing to modify the trashracks but not for 5 years.

Downstream passage for eels should be accommodated now to protect these fish, including trashrack modification and a means to pass through the dam site unharmed. MassWildlife indicated that upstream passage can be deferred for now. It is unlikely that upstream passage facilities will be needed within the 5-year term of the LIHI certification, but the issue should be revisited if there is an application for recertification. Condition #3 is recommended in order to have downstream passage in place by the 2012 outmigration season and to provide for LIHI notification should a resource agency request upstream passage during the term of the certification.

LIHI Questionnaire: Fish Passage and Protection	
C.1	Is the Facility in Compliance with <i>Mandatory Fish Passage Prescriptions</i> for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?
	<i>Applicant Response and Explanation:</i> Yes The Applicant cites a letter of March 16, 2011 from MassWildlife to LIHI (Application Appendix C-1) and an email soliciting comments from the USFWS (Application Appendix C-2). Neither refer to a fish passage prescription.
	<i>Related Public Comments:</i> None.
	<i>Reviewer Analysis/Conclusions:</i> Although American eel is present at the Facility, no prescription exists or is planned. N/A = Go to C.2.
C.2	Are there historic records of anadromous and/or catadromous fish movement through the Facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish run is extinct)?
	<i>Applicant Response and Explanation:</i> N/A
	<i>Related Public Comments:</i> None.

	<p>Reviewer Analysis/Conclusions: As discussed above, Atlantic salmon and sea lamprey are believed to have been present until blocked by construction of downstream dams in the 1800s, but no written record is known. American eels were present historically and persist.</p> <p>I am answering NO since there is an absence of a record of anadromous fish accessing the site. The Facility is many dams removed from the ocean. It did not contribute to the elimination of salmon and lamprey runs in the Shetucket and Quinebaug rivers, and no resource agency has Recommended fish passage for these fish based on a triggering event or date.</p> <p>No = Go to C.3.</p>
C.3	<p>If, since December 31, 1986:</p> <ul style="list-style-type: none"> a) Resource Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or downstream passage of anadromous or catadromous fish (including delayed installation as described in C2a above), and b) The Resource Agencies declined to issue a Mandatory Fish Passage Prescription, c) Was a reason for the Resource Agencies' declining to issue a Mandatory Fish Passage Prescription one of the following: (1) the technological infeasibility of passage, (2) the absence of habitat upstream of the Facility due at least in part to inundation by the Facility impoundment, or (3) the anadromous or catadromous fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility? <p>Applicant Response and Explanation: N/A</p> <p>Related Public Comments: None.</p> <p>Reviewer Analysis/Conclusions: The agencies have had an opportunity to prescribe fish passage as a reserved right under the exemption terms and conditions. Based on the record, they have not considered a formal prescription.</p> <p>N/A = Go to C.4.</p>
C.4	<p>If C3 was not applicable:</p> <ul style="list-style-type: none"> a) are upstream and downstream fish passage survival rates for anadromous and catadromous fish at the dam each documented at greater than 95% over 80% of the run using a generally accepted monitoring methodology? OR b) If the Facility is unable to meet the fish passage standards in 4a, has the applicant demonstrated, and obtained a letter from the US Fish and Wildlife Service or National Marine Fisheries Service confirming that demonstration, that the upstream and downstream fish passage measures (if any) at the Facility are appropriately protective of the fishery resource? <p>Applicant Response and Explanation: N/A</p> <p>Related Public Comments: None.</p> <p>Reviewer Analysis/Conclusions: The Applicant has not attempted to demonstrate effective eel passage as no measures are currently in place. After consultation with</p>

	MassWildlife and the USFWS, I recommend that Condition #3 addressing eel passage be adopted to provide appropriate protection for eels. YES to (b) (subject to Recommended Condition #3) = Go to C.5.
C.5	Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of <i>Riverine</i> fish?
	<i>Applicant Response and Explanation:</i> None prescribed.
	<i>Related Public Comments:</i> None.
	<i>Reviewer Analysis/Conclusions:</i> There are no prescriptions for riverine fish. N/A = Go to C.6.
C.6	Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?
	<i>Applicant Response and Explanation:</i> None prescribed.
	<i>Related Public Comments:</i> None.
	<i>Reviewer Analysis/Conclusions:</i> MassWildlife has agreed that the clear spacing on the existing trashracks protect stocked trout from entrainment and is consistent with the Recommendation it made during the original exemption proceeding. As part of the Applicants recent request for Class II status under the Massachusetts Department of Energy Resources Renewable Energy Portfolio Standards regulations, MassWildlife recommended that the clear spacing be reduced and the intake approach velocity not exceed 2 fps to protect eels. YES (subject to Recommended Condition #3) = PASS

Watershed Protection

The Facility dam creates an impoundment with a surface area of about 31 acres. The application does not indicate the length of the backwatered reach. No protected buffer zones have been created along the riverine impoundment through a settlement agreement or the federal exemption.

LIHI Questionnaire: Watershed Protection	
D.1	Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the high water mark in an average water year around 50 - 100% of the impoundment, and for all of the undeveloped shoreline?
	<i>Applicant Response and Explanation:</i> No The Applicant provides a description of the watershed and Project environs in Appendix D of the application.
	<i>Related Public Comments:</i> None.

	<p>Reviewer Analysis/Conclusions: Such buffer zones are more typically associated with hydroelectric reservoirs rather than small riverine impoundments. There are no buffer zones at this project. NO = Go to D.2.</p>
D.2	<p>Has the facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1.,and 2) has the agreement of appropriate stakeholders and state and federal resource agencies?</p> <p>Applicant Response and Explanation: N/A</p> <p>Related Public Comments: None.</p> <p>Reviewer Analysis/Conclusions: There is no watershed enhancement fund. The facility does not qualify for an extension of the LIHI certification term by three years. NO = Go to D.3.</p>
D.3	<p>Has the facility owner/operator established through a settlement agreement with appropriate stakeholders and that has state and federal resource agencies agreement an appropriate shoreland buffer or equivalent watershed land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation).</p> <p>Applicant Response and Explanation: The Applicant provides a description of the watershed and Project environs in Appendix D of the application.</p> <p>Related Public Comments: None.</p> <p>Reviewer Analysis/Conclusions: There is no settlement agreement. NO = Go to D.4.</p>
D.4	<p>Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project?</p> <p>Applicant Response and Explanation: N/A</p> <p>Related Public Comments: None.</p> <p>Reviewer Analysis/Conclusions: There are neither recommendations nor a shoreline management plan related to the exemptee's activities. N/A = PASS</p>

Threatened and Endangered Species Protection

There is no record that T&E species use the Project area. MassWildlife provided the Applicant with a letter stating that sufficient protection for T&E species is provided for in the FERC exemption. The USFWS is currently reviewing a 2010 petition by the Council for Endangered Species Act Reliability to determine whether American eel should be listed. A prior review, completed in 2007, determined that listing was not warranted at that time.

LIHI Questionnaire: Threatened and Endangered Species Protection	
E.1	<p>Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?</p> <p><i>Applicant Response and Explanation:</i> No The application indicates that the Project is in an area of commercial and residential use with minimal vegetation. A list of animal and plant species is provided with a statement that none of the plants are federally listed as endangered. The Applicant also refers to the March 16, 2011 letter from MassWildlife (Application, Appendix C-1) stating that T&E species are adequately protected by the FERC exemption.</p> <p><i>Related Public Comments:</i> None.</p> <p><i>Reviewer Analysis/Conclusions:</i> There is no record of state or federally listed T&E species at the Project presently. NO = Go to F.</p>

Cultural Resource Protection

The Applicant provided a letter dated March 21, 2011 from the Massachusetts Historical Commission (SHPO office) wherein it states that, because there is no project modification, construction, or demolition, it has no responsibility to review and comment for assistance to a federal agency under Section 106 of the National Historic Preservation Act of 1966. Despite this letter not being particularly helpful, there is no evidence of conflicts with respect to cultural resources protection.

LIHI Questionnaire: Cultural Resource Protection	
F.1	<p>If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?</p> <p><i>Applicant Response and Explanation:</i> Yes The Applicant provided a letter dated March 21, 2011 from the Massachusetts Historical Commission (Application, Appendix F-1). The application indicates that the letter confirmed that the Facility has no potential to affect any known cultural resources.</p> <p><i>Related Public Comments:</i> None.</p>

	<p>Reviewer Analysis/Conclusions: Although the Massachusetts Historical Commission letter does not state what the application says it state, no conflicts were identified in the record.</p> <p>YES = PASS</p>
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Recreation

The application indicates that “[m]inimal hiking and boating occurs within a safe distance of the Project.” However, during the public comment period, LIHI received comments from the French River Connection (May 30, 2011), the Dudley- Trail and Greenway Network, the Massachusetts Department of Fish and Game’s Division of Ecological Restoration, The Last Green Valley, Massachusetts State Senator Richard Moore (June 6, 2011), and the Connecticut Rivers Alliance (August 16, 2011). The comments: 1) note an increasing public interest in the river as a padding route and walking corridor; 2) recognize the Quinebaug as a National Heritage Corridor River; 3) encouraging the Applicant’s cooperation with the Dudley Trail and Greenway Network; 4) state the importance of access/portage to a river trail between Southbridge. Massachusetts and West Thompson Reservoir in Connecticut. The Applicant provides access to the site without charge. I inquired as to what level of cooperation the Applicant intended to provide given the number of comments LIHI received concerning recreational improvements. The Applicant’s representative responded by email of August 10, 2011, attaching a June 1, 2011 letter to LIHI (appended, p. A-18). The letter states, “Contingent upon the Low Impact Hydropower Institute's certification of the West Dudley hydroelectric project as a low impact facility, West Dudley Hydro, LLC will commit to working with the interested parties on a best efforts basis to address all reasonable requests for recreational access.”

LIHI Questionnaire: Recreation	
G.1	<p>If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?</p> <p>Applicant Response and Explanation: N/A The application states that there are no requirements to maintain recreational facilities; however, its intent is to “work with interested parties on a best efforts basis...”</p> <p>Related Public Comments: Several as noted above, although not related to “compliance” specifically.</p> <p>Reviewer Analysis/Conclusions: The categorical exemption does not require any specific provisions for recreation. No formal requirements or Recommendations apparently exist. However, the Applicant assures cooperation if certified.</p> <p>YES = Go to G.3.</p>

G.3	Does the Facility allow access to the reservoir and downstream reaches without fees or charges?
	<i>Applicant Response and Explanation:</i> Yes
	<i>Related Public Comments:</i> None.
	<i>Reviewer Analysis/Conclusions:</i> Access is provided without charge. YES = PASS

Facilities Recommended for Removal

The record does not indicate an interest on the part of resource agencies in removing the dam.

LIHI Questionnaire: Facilities Recommended for Removal	
H.1	Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?
	<i>Applicant Response and Explanation:</i> No
	<i>Related Public Comments:</i> None.
	<i>Reviewer Analysis/Conclusions:</i> No. NO = PASS

APPENDIX

Contents

Correspondence A-1 to A-18
Contacts..... A-19

From: Stephen Hickey [mailto:sjh@essexhydro.com]
Sent: Friday, August 19, 2011 12:43 PM
To: Jeffrey Cueto; Kubit, Robert (DEP); 'Ron Kreisman'; Slater, Caleb (FWE); 'Melissa_Grader@fws.gov'
Subject: Re: W. Dudley flows and trashrack

Jeff, please see the answers to your questions in red from West Dudley Hydro, LLC.

Please let me know if you have any additional questions.

Steve

----- Original Message -----

Subject:reply on comments

Date:Thu, 18 Aug 2011 08:16:15 -0400

From:Ben Rawson <brawson@rawsonscreens.com>

To:'Stephen Hickey' <sjh@essexhydro.com>

Steven,

See comments below

Sorry for all the questions, but...

In his letter of March 7, Robert Kubit asked for certain flow management documentation:

In order to determine if the Project is causing or contributing to violations of state water quality standards, the Department requests documentation to verify compliance with the FERC exemption requirement of an instantaneous minimum flow release of 76 cfs or inflow, whichever is less, and is operated as a run of river facility. The documentation should include a description of all activities/operations that affect flow, a description of how flow is monitored and a FERC compliance history for the last five years. An analysis of how Project operations correlate to USGS flow gauge records should also be included.

I don't believe that I received a copy of the response, just his follow up letter of July 8 with the list of agreed-upon conditions.

My guess is that the exemptee has not historically monitored flows and headpond level, so no site records were available to document compliance. Is that correct? Based on Mr. Kubit's letter, my understanding is that the exemptee will be maintaining compliance records in the future.

Correct

Condition #1 of the letter states that the turbines will immediately go off line if the headpond drops more than two inches below the top of the boards but that inflow or mandated minimum flow will be released at all times (until refill is complete). How is that accomplished if the turbines are off line? It would seem that, per #4, the operator would have to back the unit down

to refill the impoundment at 10% of inflow in anticipation of the shutdown. It would only work with the variable unit and a good understanding of the inflow recession. **The construction of West Dudley hydro plant is such that there are removable weirs under the bridge leading to the powerhouse. The weirs do not complete a 100% seal against leakage. We operate the plant with a few of the weirs removed to allow flow under the bridge steering debris in that direction and away from the trash racks. When the variable unit reaches a point where it will cease operation the inflow to the dam is below the 76cfs required by the exemption. Therefore with the boards removed the impoundment will refill utilizing the 10 percent refill rate. The turbines will not resume operation until the pond reaches a sufficient level to permit operation in a run of river mode.**

That brings me to another question. Do the inflow fluctuations persist? A&D Hydro had responded to FERC during a 2003-04 investigation that fluctuating flows from Westville Dam created operating problems for West Dudley. **The dam at Westville does vary from time to time and often abruptly. Also there are 2 other dams located between Westville and West Dudley. I believe both dams contain gates that can be opened and closed at the owners' discretion. All of these can affect changes at West Dudley.**

Condition #2 relates to the clear spacing on the trashrack. It's to be deferred until the rack needs replacing. When is that anticipated? I would think something more definite would be in order given that eel outmigration is a current issue. Could an overlay be installed during outmigration periods or maybe a commitment to replace the rack during the next construction season? **West Dudley will agree to install the ¾" spacing on the racks within the next 5 years.**

Thank you,

Ben Rawson
West Dudley Hydro
99 Canal St.
Putnam CT, 06260
Phone: 860-928-4458
Fax: 860-928-0366
Cell: 860-428-2004

Jul. 19. 2011 5:45PM

No. 1158 P. 2



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Central Regional Office • 627 Main Street, Worcester MA 01608 • 508-792-7650

CEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMEL
Commissioner

Stephen Hickey
Essex Power Services, Inc.
on behalf of West Dudley Hydro, LLC
55 Union Street, 4th Floor
Boston, MA 02108

July 8, 2011

Re: Request For Conditional Approval
West Dudley Hydro, FERC #7254

Dear Mr. Hickey,

In pursuit of certification from the Low Impact Hydropower Institute, Essex Power Services has requested the MA Department of Environmental Protection (the Department) to confirm the West Dudley Hydro facility (Project) is not expected to cause or contribute to violations of state water quality standards. Essex Power Services, on behalf of the owner and operator of the Project has provided a list of conditions intended to provide assurance to the Department that state water quality standards will be met. The Department and the MA Division of Fisheries & Wildlife have reviewed the following conditions and agree the Project is not expected to cause or contribute to violations of state water quality standards provided the conditions are met.

1. The Project is to be operated at all times in a run-of-river mode with inflows equal to outflows. The Project Impoundment is to be maintained within a 2 inch band below the top of the flashboards in order to prevent excess spillage over the boards. If the band drops below 2 inches, the Project turbines are programmed to go immediately offline and the water levels rise in less than five minutes and spill over the boards. Actual refill time depends on inflow but the Project inflow or mandated minimum flow discharge is released at all times.
2. The Project currently has trashracks with 1.75 inch spacing and proposes to update the racks to conform to the 1 inch spacing requirement at such time as the replacement of the racks is required due to wear. The current trash racks have an approach velocity of 1.0 fps and extend to full depth.
3. The Project owner is to maintain hourly recordings of pond levels in the Project impoundment which would be available to any Interested party upon request. Pond levels will be maintained within the 2 inch band below the height of the flashboards. The current height of the four foot flashboards is 381.25 ft. m.s.l.
4. West Dudley Hydro, LLC. will utilize an impoundment refill procedure whereby 90% of the inflow is passed downstream with the remaining 10% being used to refill the impoundment during draw downs for maintenance or emergency purposes.

This information is available in alternate format. Call Michelle Waters-Ekanem, Diversity Director, at 617-292-5761, TDD# 1-866-539-7622 or 1-617-574-8868
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Jul 19, 2011 5:46PM

No. 1158 P. 3

5. The Project owner will install upstream and/or downstream fish passage facilities when required by a Relevant Agency in accordance with the terms of the FERC exemption.
6. West Dudley Hydro LLC agrees to inspections of the Project by relevant hydroelectric agencies upon 12 hours notice so as to provide a contact at this unmanned facility.
7. West Dudley Hydro, LLC agrees to the Department and MA Division of Fish & Wildlife's request to reserve their right to alter terms and conditions of this agreement so as to better allow them to carry out their responsibilities.

If you have any questions, please contact me at 508-767-2854.

Sincerely,

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

Robert Kubit, P.E.

Cc: Caleb Slater/MADFW
Melissa Grader/USFWS

From: Kubit, Robert (DEP) [mailto:robert.kubit@state.ma.us]
Sent: Wednesday, August 03, 2011 10:52 AM
To: 'Jeffrey Cueto'
Subject: RE: West Dudley LIHI application

Jeff,

In answer to your questions:

1. **As you have not yet received the D.O. data, can you clarify for me whether you are reasonably assured at this juncture that D.O. standards are met, in which case the results of this summer's study will only be for confirmation purposes.** I am reasonably assured D.O. standards are met.
2. Was it Essex's intent to enter into a formal agreement with DEP to adopt the conditions in your letter, or is the plan to reopen the exemption? Neither. The conditions of the July 8 letter are to be followed else renewal of LIHI certification in 5 years will be opposed by MassDEP. The MADOER will also be notified of compliance status.

Sorry for the wait.

Bob

Robert Kubit, P.E.
MassDEP
Division of Watershed Management
627 Main Street
Worcester MA 01608
Telephone: (508) 767-2854
Email: robert.kubit@state.ma.us
Fax: (508) 791-4131

From: Jeffrey Cueto [mailto:ompompanoo@aol.com]
Sent: Wednesday, August 03, 2011 8:04 AM
To: Kubit, Robert (DEP)
Subject: RE: West Dudley LIHI application

Bob – I know you're probably very busy, but a response to the message below would be appreciated.

Thanks.

Jeff

From: Jeffrey Cueto [mailto:ompompanoo@aol.com]
Sent: Friday, July 22, 2011 8:50 AM
To: 'robert.kubit@state.ma.us'
Cc: Stephen Hickey; 'Fred Ayer'; Ronald Kreisman
Subject: West Dudley LIHI application

Hi, Bob.

Steve Hickey forwarded your letter of July 8th regarding compliance of the West Dudley Project with Mass. water quality standards. As I understand it, Essex provided you with a list of conditions intended to provide you with assurance that standards will be met. The conditions relate to flow and headpond management, fish passage and entrainment protection, compliance inspections, and a reserved right to modify the conditions. In your earlier letter of March 7, 2011, you had asked for information on flow compliance and had requested D.O. sampling in order to obtain data upon which to base a determination of compliance with D.O. standards. **As you have not yet received the D.O. data, can you clarify for me whether you are reasonably assured at this juncture that D.O. standards are met, in which case the results of this summer's study will only be for confirmation purposes.**

This project was exempted by FERC in 1983. The terms and conditions set at that time are very limited. Was it Essex's intent to enter into a formal agreement with DEP to adopt the conditions in your letter, or is the plan to reopen the exemption?

Thanks.
Jeff

><{{{> **Jeffrey R. Cueto, P.E.**
><{{{> (802) 223-5175
><{{{> ompompanoo@aol.com

August 2, 2011

Howard B. Bernstein, Ph.D.
Energy Portfolio Standards Program Manager
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020, Boston, MA 02114
Howard.Bernstein@state.ma.us

Dr. Bernstein,

The Department of Fish and Game ("DFG") hereby submits the following comments on the pending application of West Dudley Hydro LLC for RPS Class II status under the MA Green Communities Act for its project located on the Quinebaug River, in west Dudley, MA.

DFG is submitting these comments in order to fulfill the requirements of the Massachusetts Department of Energy Resources ("DOER") Renewable Energy Portfolio Standard Regulations (225 CMR 14.00; "RPS I" and 225 CMR 15.00; "RPS II"). The RPS I and RPS II regulations were promulgated by DOER on January 1, 2009.

The West Dudley Project has applied for Low Impact Hydropower Certification and expects to be certified in August 2011. During the LIHI certification process the Division was consulted about the status of American eel in the Quinebaug River in MA. In an email dated August 1, 2011 to the Division reported to LIHI "MADFW does have survey data with adult American eels from a site upstream of the Dexter Russell dam in Southbridge on the Quinebaug River-- so downstream passage protection would be required, and we will work on upstream passage as the downstream dams get it installed."

DFG believes that the West Dudley Hydroelectric Project can be RPS certified as long as the project:

1. Continues to operate as run of river
2. Installs ¾ inch clear space trash racks with an approach velocity less than 2 feet per second in order to protect downstream migrant American eels
3. Agrees to install upstream eel passage if and when the Division deems passage as necessary

Thank you for this opportunity to comment.



Caleb Slater, Ph.D.
Anadromous Fish project Leader
MA Division of Fisheries and Wildlife

cc Natalie Andrews, DoER, Natalie.Andrews@state.ma.us
Mike Judge, DoER, Mike.Judge@state.ma.us
Stephen Hickey, Essex Power, sjh@essexhydro.com

www.masswildlife.org

Division of Fisheries and Wildlife
Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-6301
An Agency of the Department of Fish and Game

From: Slater, Caleb (MISC) [mailto:caleb.slater@state.ma.us]
Sent: Monday, August 08, 2011 3:59 PM
To: Jeffrey Cueto
Cc: 'Melissa Grader'; 'Gephard, Steve'
Subject: RE: Quinebaug River and eels

Jeff.

We are talking about very few adult eels in the upper Quinebaug River and I expect very few juvenile eels reaching West Dudley. I am fine with waiting on upstream passage until there is a demonstrated need (like passage at the dams below- or some surveys that show lots of juveniles below the project). The same logic could be used to argue for waiting for upstream passage to be in place before downstream protections are put in place- but I would argue that the few adult eels we do have in the upper watershed deserve downstream protection now...

Caleb



Caleb Slater, PhD
Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
(508) 389-6331

From: Jeffrey Cueto [mailto:ompompanoo@aol.com]
Sent: Wednesday, August 03, 2011 8:30 AM
To: Slater, Caleb (FWE)
Cc: 'Melissa Grader'; 'Gephard, Steve'
Subject: RE: Quinebaug River and eels

Thanks for the response, Caleb.

Based on the presence of adult eels at the Dexter Russell dam, would you conclude that at least limited numbers of eels are able to move upstream past the West Dudley dam and the West Thompson flood control dam? If that is the case, it would seem that upstream passage enhancement at West Dudley could be considered a present need.

The LIHI standard for fish passage is, in part:

When no recent fish passage prescription exists for anadromous or catadromous fish, and the fish are still present in the area, the facility must demonstrate either that there was a recent decision that fish passage is not necessary for a valid environmental reason, that existing fish passage

survival rates at the facility are greater than 95% over 80% of the run, or provide a letter prepared for the application from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service confirming the existing passage is appropriately protective.

LIHI recently certified the Mechanicsville, CT project on the French River subject to a passage condition:

Within one year of the date of issuance of the LIHI certification, Saywatt shall enter into, and provide LIHI with a copy of, an agreement reached between the U.S. Fish and Wildlife Service, the Connecticut Department of Environmental Protection, and Saywatt for providing safe, timely, and effective upstream and downstream passage for American eel, including terms governing any operational modifications, such as increased spillage during outmigration; the final design of facilities, their construction, operations, and maintenance; and the implementation schedule for design, installation, and operations. LIHI may extend this deadline by up to six months if Saywatt provides letters of concurrence from the agencies.

This provision resulted in LIHI concluding that the project is “appropriately protective” under the standard. So the question in my mind is whether certification of West Dudley should carry a similar condition.

Please let me know your thoughts on this. If you agree that a condition should be placed in the certification, feel free to suggest wording.

Thanks for the help on this.
Jeff

From: Slater, Caleb (MISC) [mailto:caleb.slater@state.ma.us]
Sent: Monday, August 01, 2011 12:22 PM
To: Gephard, Steve; 'Jeffrey Cueto'
Cc: 'Melissa Grader'
Subject: RE: Quinebaug River and eels

Jeff,

MADFW does have survey data with adult American eels from a site upstream of the Dexter Russell dam in Southbridge on the Quinebaug River-- so downstream passage protection would be required, and we will work on upstream passage as the downstream dams get it installed.

Caleb



Caleb Slater, PhD

Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
(508) 389-6331

From: Gephard, Steve [mailto:Steve.Gephard@ct.gov]
Sent: Friday, July 29, 2011 9:48 AM
To: 'Jeffrey Cueto'
Cc: 'Melissa Grader'; Slater, Caleb (FWE)
Subject: RE: Quinebaug River and eels
Importance: Low

Hi Jeff,

1. Eels are currently reaching the confluence of the Quinebaug and French Rivers in CT. The numbers are low due to the presence of downstream dams. Of those dams, 3 have eel passage, 4 do not. Of the four without: one dam probably does not need eel passage due to its low height and condition (eels will go through readily), one is slated to install eel passage, one we will require eel passage upon relicensing (2024), and one we may work with the owner proactively to seek voluntary installation of an eel pass within two years. SO....we have LIMITED connectivity for eels up to the WTFCD.

2. I cannot conclude whether or not WTFCD is an complete barrier to eels, having never really inspected it. Some FCD certainly are while others allow some eels to sneak by. It depends upon the design. The Thomaston FCD sends all flow down a smooth sloped concrete trough at high velocities for over 100 feet. No way eels will get up that. The outlet at the Mansfield Hollow FCD appears to be recessed with lower velocities. While it stops most eels, one or two eels have been found upstream. I hope to examine the WTFCD when I make my site visit to Mechanicsville during the next month. I realize that probably doesn't help you now. I would recommend asking Caleb for MA electrofishing data. If his agency has done stream surveys in the MA section of the Quinebaug River, hopefully they have fish abundance data and can conclude whether or not eels are above the WTFCD.

3. Not sure, but probably beyond 2024.

Cutting to the chase, it might appear that eel passage at West Dudley is not urgent (subject to analysis of MADFW data) and maybe LIHI certification could be appropriate without it—for now. I don't know when/how projects come up for re-certification but if the time comes when the eel passage facility at Cargill Falls (Putnam, CT) starts passing 100 eels per year, I would think that West Dudley might be expected to install eel passage to retain certification. The facility at Cargill Falls and probably the future facility at the next upstream dam will include "attract-trap-collect-truck-release" eel passes. While initial captures are likely to be released immediately upstream of the project, I would expect that as numbers increase, my agency will work with project operators to release some of the subsequent captures upstream of the WTFCD, assuming that we conclude that it is a barrier to eel migration. In that event, eels could begin to accumulate downstream of West Dudley.

Steve

From: Jeffrey Cueto [mailto:ompompanoo@aol.com]
Sent: Friday, July 29, 2011 9:20 AM
To: Gephard, Steve
Cc: Melissa Grader; Caleb Slater
Subject: Quinebaug River and eels

Steve – I am also reviewing a LIHI application for the West Dudley project in Massachusetts just above the state line. I have a few questions if you don't mind:

1. Is it correct that the only barrier for upstream movement of eels between West Dudley and the French River confluence is the West Thompson Flood Control Dam?
2. Recognizing that eels are able to access at least as far upstream as the French River despite existing dams without passage facilities, is there limited movement past West Thompson or is it a full barrier to upstream movement and eels are no longer present even in small numbers?
3. When do you expect the restoration goal of enhanced passage for eels for all of the CT Quinebaug mainstem to be achieved?

Thanks.
Jeff

><{{{~}> **Jeffrey R. Cueto, P.E.**
><{{{~}> (802) 223-5175
><{{{~}> ompompanoo@aol.com

From: Melissa_Grader@fws.gov [mailto:Melissa_Grader@fws.gov]
Sent: Monday, August 15, 2011 5:01 PM
To: Jeffrey Cueto
Subject: Comments West Dudley Hydroelectric Project FERC # 7254 LIHI application

OK, I finally have some comments for you - thanks for your patience!

As you know, FWS only imposed 2 terms and conditions on the exemption - fish passage and the min. below-project flow. This was before we knew to include reopeners and other "standard" T&Cs like we do now.

As you also know, the West Dudley Project has had a history of causing flow perturbations. It should be noted that A&D Hydro has been quite responsive to agency concerns and cooperative re: flow fluctuations and how to minimize them. That being said, after reviewing the file, we would support LIHI certification of this Project with the following conditions:

1. Eel passage - we support the language you've suggested
2. Water Quality - we support MA DEP's 3/7/11 letter outlining a water quality sampling program that A&D Hydro should undertake
3. Operations and Flow Monitoring Plan - A&D Hydro should develop a formal plan detailing the existing equipment used to monitor and record project generation and verify compliance with run-of-river operation (in consultation with FWS and MA).

Hope that helps - again, sorry it took me so long to respond.

Regards,
Melissa

~~~~~  
Melissa Grader  
Fish and Wildlife Biologist  
US FWS/New England Field Office  
c/o CT River Coordinator's Office  
103 East Plumtree Road  
Sunderland, MA 01375  
413-548-8002, x124  
413-548-9622 (FAX)  
[melissa\\_grader@fws.gov](mailto:melissa_grader@fws.gov)  
[www.fws.gov/newengland](http://www.fws.gov/newengland)  
~~~~~

▼ "Jeffrey Cueto" <ompompanoo@aol.com>

"Jeffrey Cueto"
<ompompanoo@aol.com>

To<Melissa_Grader@fws.gov>

cc

08/15/2011 08:54 AM

SubjectFW: FW: DOER Comments West
Dudley Hydroelectric Project FERC #
7254

FYI

From: Slater, Caleb (MISC) [<mailto:caleb.slater@state.ma.us>]
Sent: Monday, August 15, 2011 8:47 AM
To: Jeffrey Cueto
Subject: RE: FW: DOER Comments West Dudley Hydroelectric Project FERC # 7254

Jeff,

That language looks good to me.

Caleb



Caleb Slater, PhD
Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
(508) 389-6331

From: Jeffrey Cueto [<mailto:ompompanoo@aol.com>]
Sent: Sunday, August 14, 2011 5:03 PM
To: Slater, Caleb (FWE)
Subject: FW: FW: DOER Comments West Dudley Hydroelectric Project FERC # 7254

Hi, Caleb. If you have the time, could you get back to me on this message this week so I can wrap up my review?

Thanks.

Jeff

From: Jeffrey Cueto [<mailto:ompompanoo@aol.com>]
Sent: Monday, August 08, 2011 4:25 PM
To: 'Slater, Caleb (MISC)'
Cc: 'Gephard, Steve'; 'Melissa Grader'; Ronald Kreisman
Subject: FW: FW: DOER Comments West Dudley Hydroelectric Project FERC # 7254

Caleb – Thanks for the response you sent me today. I am forwarding the below message from Steve Hickey. Bob Kubit refers to a MADFW letter asking for trashrack modifications to exclude eels. Would you mind sending me a copy? To accommodate downstream passage, would the following condition, incorporated in the LIHI certification, work?

Within one year of the date of issuance of the LIHI certification, West Dudley, LLC shall enter into, and provide LIHI with a copy of, an agreement reached between the U.S. Fish and Wildlife Service, the Massachusetts Department of Fish and Wildlife, and West Dudley, LLC for providing safe, timely, and effective downstream passage for American eel, including terms governing any operational modifications, such as increased spillage during outmigration; the final design of facilities, their construction, operations, and maintenance; and the implementation schedule for design, installation, and operations. LIHI may extend this deadline by up to six months if West Dudley, LLC provides letters of concurrence from the agencies.

Thanks,
Jeff

From: Stephen Hickey [mailto:sjh@essexhydro.com]
Sent: Thursday, September 08, 2011 9:13 AM
To: Jeffrey Cueto
Subject: Fwd: RE: West Dudley Hydro trash rack compliance with Mass DF&W 1983 request for confirmation

Jeff,

Please see the below email from Caleb Slater in regards to West Dudley Hydro's compliance with the requirements of the 1983 letter from the Massachusetts Department of Fish & Wildlife as it concerns the installation of measures at the project to protect against stock trout passing through the turbines. I will also forward a letter from Richard Hartley, fisheries biologist for the Massachusetts Division of Fish and Wildlife, confirming the adequacy of the existing racks with 1.5" clear spacing in regards to the 1983 recommendation.

Please confirm that given the project is in compliance with the 1983 recommendation and has committed to replacing the existing racks with racks with 3/4" clear spacing for the protection of downstream migrating eel prior to the project's application for re certification by LIHI in 5 years, you are now in a position to recommend the certification of West Dudley Hydro.

Thank you and please call me with any questions.

Steve

Stephen Hickey
Hydro Management Group, LLC
on behalf of West Dudley Hydro, LLC
55 Union Street, 4th Floor
Boston, MA 02108
tel: 617-367-0032
fax: 617-367-3796

----- Original Message -----

Subject: RE: West Dudley Hydro trash rack compliance with Mass DF&W 1983 request for confirmation

Date: Thu, 8 Sep 2011 08:32:59 -0400

From: Slater, Caleb (MISC) <caleb.slater@state.ma.us>

To: Stephen Hickey <sjh@essexhydro.com>, "Hartley, Richard (MISC)" <richard.hartley@state.ma.us>, "Davis, Bill (MISC)" <bill.davis@state.ma.us>

Stephen,

I have checked my files and we have no record of the 1983 letter you reference other than the FERC reference to it that you mention. 1 inch clear space racks are the current standard for downstream Atlantic salmon smolt protection. Atlantic salmon smolts are 6-8 inches long. Stocked trout are

12+ inches long. I would assume that 1.5 inch clear space racks would protect these stocked trout.

Caleb

Caleb Slater, PhD
Anadromous Fish Project Leader
Massachusetts Division of Fisheries and Wildlife
(508) 389-6331

-----Original Message-----

From: Stephen Hickey [<mailto:sjh@essexhydro.com>]
Sent: Wednesday, September 07, 2011 4:20 PM
To: Hartley, Richard (FWE); Slater, Caleb (FWE); Davis, Bill (FWE)
Subject: West Dudley Hydro trash rack compliance with Mass DF&W 1983 request for confirmation

Dear Richard,

Attached is the April 25, 1983 letter from the Massachusetts Department of Fish and Wildlife ("Mass DF&W") submitted in response to a request for comments in relation to the 1983 application for an exemption from licensing for the 350kW West Dudley hydroelectric project located on the Quinnebaug River in the town of West Dudley, Massachusetts. The project has gone through series of ownership changes since the project exemption was issued in June of 1983 and the current project owner is requesting confirmation from you that the current trash rack spacing of 1.5" clear spacing which has been installed since the project was issued an exemption from the licensing in 1983 is responsive to the Mass DF&W request i 1983 for trash racks "placed and spaced at a distance to adequately prevent stocked trout from passing through tributaries."

As way of background, the current project owner has submitted an application to the Low Impact Hydropower Institute for the low impact certification of the project and the LIHI consultant has requested confirmation that the facility is in compliance with the 1983 recommendation of Mass DF&W.

Thank you and please contact me with any questions.

Stephen Hickey
Hydro Management Group, LLC
on behalf of West Dudley Hydro, LLC
55 Union Street, 4th Floor
Boston, MA 02108
tel: 617-367-0032
fax: 617-367-3796

From: Stephen Hickey [mailto:sjh@essexhydro.com]
Sent: Wednesday, August 10, 2011 2:19 PM
To: Jeffrey Cueto
Subject: Re: West Dudley recreation

Jeff,

The attached letter was submitted to Fred Ayer on June 1, 2011 in response to the comment letters you reference below indicating that "Contingent upon the Low Impact Hydropower Institute's certification of the West Dudley hydroelectric project as a low impact facility, West Dudley Hydro, LLC will commit to working with the interested parties on a best efforts basis to address all reasonable requests for recreational access."

Please let me know if you have any additional questions.

Steve

On 8/10/2011 1:52 PM, Jeffrey Cueto wrote:

Steve – LIHI received a number of comment letters related to enhancing recreational use at the site, including trails and portaging, yet the application contains very little regarding what the exemptee does to enhance recreational use and the response entered in the questionnaire under the recreation criterion is “not applicable.” I think I understand the basis for that response, but does the exemptee plan to cooperate regarding recommended improvements? I note that one commenter recommended that this be made a condition of certification.

Thanks.

Jeff

><{{{> *Jeffrey R. Cueto, P.E.*

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WEST DUDLEY HYDRO, LLC

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STURBRIDGE, MA 01566

TELEPHONE: +860-428-2004
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E-MAIL: brawson@rawsonscreens.com

June 1, 2011

Low Impact Hydropower Institute
34 Providence Street
Portland, Maine 04103

Attn: Mr. Fred Ayer

Dear Mr. Ayer,

Thank you for providing West Dudley Hydro, LLC ("West Dudley") with a copy of the comments submitted to the Low Impact Hydropower Institute by the Dudley Trail and Greenway Network and the Massachusetts Department of Fish and Game in connection with the West Dudley application for LIHI certification. West Dudley appreciates the opportunity to respond to these comments. Contingent upon the Low Impact Hydropower Institute's certification of the West Dudley hydroelectric project as a low impact facility, West Dudley Hydro, LLC will commit to working with the interested parties on a best efforts basis to address all reasonable requests for recreational access.

In regards to the Dudley Trail and Greenway Network's request for "a fish ladder to reconnect the river as it was in the past", West Dudley Hydro, LLC is committed to working with the relevant agencies per the terms of its FERC exemption and will install upstream and downstream fish passage facilities when so directed. Dr. Caleb Slater at the Massachusetts Division of Fisheries and Wildlife confirmed via letter dated March 16, 2011 that there are no anadromous fish species present in the vicinity of the Project and thus upstream and downstream fish passage at the project is not required until such time as migratory fish are restored to the project area. (see Exhibit C-1 of the Project's LIHI application)

By: West Dudley Hydro, LLC


Ben Rawson
Manager

CONTACTS

Entity	Authorized Representatives	Contact Information
West Dudley Hydro, LLC (applicant)	Ben Rawson Stephen Hickey	509 Main Street, PO Box 199 Sturbridge, MA 01566 Telephone: (860) 928-4458 Email: brawson@rawsonscreens.com Essex Power Services, Inc. 55 Union Street, 4th Floor Boston, MA 02108 Telephone: (617) 367-0032 Email: sjh@essexhydro.com
United States Fish and Wildlife Service	Melissa Grader Fish & Wildlife Biologist	c/o Connecticut River Coordinator's Office 103 East Plumtree Road Sunderland, MA 01375 Telephone: (541) 312-6422 Email: melissa_grader@fws.gov
National Marine Fisheries Service	Marjorie Mooney	Science Center 166 Water Street Woods Hole, MA 02543-1026 Telephone: (508) 495-2000 Email: Marjorie.Mooney-Seus@noaa.gov
Mass. Department of Environmental Protection Division of Watershed Management	Robert Kubit, P.E.	Mass DEP Division of Watershed Management 627 Main Street Worcester, MA 01608 Telephone: (508) 767-2854 Email: Robert.kubit@state.ma.us
Massachusetts Division of Fisheries and Wildlife	Caleb Slater, PhD Anadromous Fish Project Leader	Telephone: (508) 389-6331 Email: caleb.slater@state.ma.us
State Historical Preservation Office	Edward L. Bell Senior Archaeologist	Massachusetts Historical Commission 220 Morrissey Boulevard Boston, MA 02125 Telephone: (617) 727-5128
National Park Service Rivers and Special Studies Branch	Kevin Mendik	Telephone: (617) 223-5299 Email: kevin_mendik@nps.gov