

# REVIEW OF APPLICATION FOR LIHI RECERTIFICATION OF THE CROCKER DAM HYDROELECTRIC PROJECT, LIHI #127

FERC Project No. 13237 Whitman River, Westminster Massachusetts



October 28, 2020 Maryalice Fischer, Certification Program Director

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## FINAL REVIEW OF APPLICATION FOR LIHI RECERTIFICATION OF THE CROCKER DAM HYDROELECTRIC PROJECT, LIHI #127

This report provides final review findings and recommendations for the recertification application submitted to the Low Impact Hydropower Institute (LIHI) by Whitman River Dam, Inc. (Applicant) for recertification of the Crocker Dam Hydroelectric Project, LIHI #127 (Project). The Project is a 0.174 MW facility located on the Whitman River in Westminster, Worcester County, Massachusetts. The final recertification application package was filed on August 16, 2020 and is subject to review under the 2<sup>nd</sup> Edition LIHI Handbook.

## I. INTRODUCTION

The Project was first certified by LIHI in 2015 for a five-year term that expired on September 15, 2020. The term was extended to November 30, 2020 to allow time to complete the recertification process. The original certification included the following five conditions, four of which have been satisfied. The original LIHI certification was granted for the pre-operational facility.

**Condition 1.** Within 3 months of turbine installation, the facility owner shall send LIHI a copy of the plan they submit to MDEP for monitoring run-of-river operation. The owner shall notify LIHI when the plan has been approved by MDEP.

<u>Status:</u> The condition was satisfied in 2020 with filing of the final plan with FERC on July 6, 2020.

**Condition 2.** Within 3 months of turbine installation, the facility owner shall send LIHI a copy of the plan submitted to MDEP for monitoring and maintenance of the 6 mg/l dissolved oxygen standards and shall notify LIHI when that plan has been approved by MDEP.

Status: The condition was satisfied in 2020 with the February 18, 2020 filing of the final plan.

**Condition 3.** In accordance with the applicable Water Quality Certificate, the facility owner shall install full-depth, one-inch clear trashracks with velocities less than or equal to 2 feet per second at the intakes to reduce impingement and entrainment of fish at the facility.

<u>Status:</u> The condition was satisfied in 2020 with installation of the trashracks and velocity verification.

**Condition 4.** The facility owner shall notify LIHI within 30 days of any decision by relevant fish resource agencies (MDFW and/or USFWS) that would require the installation of fish passage facilities.

<u>Status:</u> The condition remains active although no agency requests for fish passage have yet been made.

**Condition 5.** The facility owner shall notify LIHI when the facility comes online and begins producing electricity. This notice shall occur as soon as possible and no later than 30 days after startup.

<u>Status:</u> The condition was satisfied in 2020 with National Grid's interconnection authorization on October 2, 2020. The facility is now in commercial operation.

## II. RECERTIFICATION PROCESS AND MATERIAL CHANGE REVIEW

Under the 2<sup>nd</sup> Edition LIHI Handbook, reviews are a two-phase process starting with a limited review of a completed LIHI application, focused on three questions:

- (1) Is there any missing information from the application?
- (2) Has there been a material change in the operation of the certified facility since the previous certificate term?
- (3) Has there been a change in LIHI criteria since the Certificate was issued?

In accordance with the Recertification Standards, if the only issue is that there is some missing information, a Stage II review may not be required. These standards also state that "material changes" mean non-compliance and/or new or renewed issues of concern that are relevant to LIHI's criteria. If the answer to either question (2) or (3) is "Yes", a more thorough review of the application using the LIHI criteria in effect at the time of the recertification application, and completion of a Stage II report is required. As a result, all projects currently applying for renewal must go through a full review unless their most recent certification was completed using the 2<sup>nd</sup> Edition Handbook.

A review of the initial application submitted August 16, 2020 resulted in a Stage I report dated August 28, 2020. The Stage I assessment found no material changes at the Project (at that time the Project was not operating) and determined that no additional information was needed. The application was posted for public comment on August 28, 2020 and the 60-day public comment period ended on October 27, 2020. This Stage II assessment included review of the application package, the FERC elibrary, other publicly available information, and annual compliance statements submitted during the past term of Certification.

## III. PROJECT LOCATION AND SITE CHARACTERISTICS

The Crocker Dam Hydroelectric Project is located at river mile 2.5 on the Whitman River in the Town of Westminster in Worcester County, Massachusetts. The Project is located at the existing Crocker Pond Dam, built in 1933 to provide water supply for the former Crocker Paper Company for industrial purposes.

The Whitman River is located in the Upper Worcester Plateau ecoregion of central Massachusetts and comprises part of the Nashua River Watershed. The Whitman River originates at the outlet of Lake Wampanoag and drains southeasterly, flowing through Ashburnham, Westminster and Fitchburg, Massachusetts, traveling through several small ponds in Westminster including Crocker Pond, and ultimately merges with Flag Brook in West Fitchburg to form the North Nashua River. The North Nashua River flows to the Nashua River which then flows to the Merrimack River (Figure 1).

There are two upstream dams - Lake Wampanoag Dam, and Westminster Impoundment Dam, both of which are non-powered at this time, both are owned by the Applicant. The only downstream dam on the Whitman River is Snows Mill Pond, also non-powered. Other downstream dams on the Nashua River include the non-powered Arden Mill Dam, the Ice House Hydroelectric Project (LIHI #44) and the Pepperell Dam in Pepperell Massachusetts.



Figure 1. Project location and watershed

The Project (Figures 2 – 4) consists of:

- a 520-foot-long, 38.5-foot-high earthen embankment and masonry dam with crest elevation of 750.5 feet above mean sea level (msl) and a 120-foot-long arched spillway section currently topped with 26-inch-high wooden flashboards, and an 8-foot-wide, 12-foot-high floodgate.
- a 3-foot-wide, 3-foot-high mud gate.
- an existing gate house with a 21.6-foot-high (at water line), 6.0-foot-wide metal trash rack with 1-inch-wide bar spacing.
- a 42-inch-diameter, 47-foot-long penstock that was extended from the original 17-foot-long penstock.
- a new powerhouse containing one horizontal Kaplan turbine with a maximum discharge of 60 cfs at 38.4 ft. net head. The output range is 6 KW to 175 KW. The turbine connects to a horizontal air-cooled 3 phase 480 volt generator.
- a bridge and 20-foot-wide, 6-foot-deep, 35-foot-long tailrace.
- a 240-foot-long, 480-volt transmission line, and appurtenant facilities.

The dam and the gatehouse located at the top of the dam were constructed in 1933. The powerhouse at the base of the dam was constructed as part of the hydroelectric development licensed in 2012, to retain the historic look of the gatehouse. The dam and the 47-foot-long penstock create a de minimis bypassed reach.

The Project operates in an instantaneous true run-of-river mode. The powerhouse is located adjacent to the impoundment creating a very short (~59 ft.) bypass reach which is comprised of bedrock. The dam creates a 102.9 acre impoundment with a depth of 25 feet at the dam. The impoundment has a normal storage capacity of approximately 1,027 acre-feet and a maximum capacity of 1,835 acre-feet. The shorelines surrounding the impoundment consist of heavy vegetation including wood lands, brush and weedy thicket sub-growth and several house lots.

## Figure 2. Key Project Features



## Figure 3. Turbine



Figure 4. Impoundment



#### IV. REGULATORY AND COMPLIANCE STATUS

FERC issued an original license (Minor Project, FERC No. 13237) to the Project on September 5, 2012<sup>1</sup> and on July 19, 2015, FERC issued a two-year extension to commence construction by September 5, 2016 to be completed by September 5, 2019. Massachusetts Department of Environmental Protection (MDEP) issued a Water Quality Certificate (WQC) on February 4, 2011.<sup>2</sup> Construction was completed in 2019 and commercial operation began in early October 2020 after receipt of authorization from National Grid to interconnect with the local transmission system. A review of the FERC elibrary from January 1, 2015 to October 27, 2020 identified only construction related filings, requests and authorizations for extensions of filings for some license articles, and dam safety documents.

## V. PUBLIC COMMENTS RECEIVED OR SOLICITED BY LIHI

The application was publicly noticed on August 28, 2020 and notice of the application was forwarded to resource agency and stakeholder representatives listed in the application. No public comments were received during the 60-day comment period which ended on October 27, 2020. Based on the completeness of the application, no direct outreach to resource agencies or other stakeholders was conducted as part of this review.

## VI. ZONES OF EFFECT

The Applicant delineated the Project into two Zones of Effect (ZoEs) as shown in Figure 5.

- Zone 1 is the impoundment extending approximately 0.75 miles upstream from the dam.
- Zone 2 includes the de minimis bypassed reach, the tailrace and the downstream reach below the powerhouse extending approximately 0.2 miles from the dam.

<sup>&</sup>lt;sup>1</sup> <u>https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13111242</u>

<sup>&</sup>lt;sup>2</sup> pp 35-44, <u>https://elibrary.ferc.gov/eLibrary/idmws/common/opennat.asp?fileID=12562845</u>

## Figure 5. Zones of Effect



The Applicant selected the standards shown in the tables below. The Reviewer agrees with the selected Standards with one exception shown in **RED** below.

Zone 1: Impoundment		ALTERNATIVE STANDARDS					
		1	2	3	4	PLUS	
А	Ecological Flow Regimes	х	X				
В	Water Quality		Х				
С	Upstream Fish Passage	х					
D	Downstream Fish Passage		Х				
Е	Watershed and Shoreline Protection	х					
F	Threatened and Endangered Species Protection	х					
G	Cultural and Historic Resources Protection	Х					
Н	Recreational Resources			Х			

Zone 2: Bypass, Tailrace, Downstream Reach		ALTERNATIVE STANDARDS						
		1	2	3	4	Plus		
А	Ecological Flow Regimes		Х					
В	Water Quality		Х					
С	Upstream Fish Passage	х						
D	Downstream Fish Passage	х						
Е	Watershed and Shoreline Protection	х						
F	Threatened and Endangered Species Protection	х						
G	Cultural and Historic Resources Protection	х						
Н	Recreational Resources			Х				

## **VII. DETAILED CRITERIA REVIEW**

#### **A: Ecological Flow Regimes**

**Goal:** The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.

**Assessment of Criterion:** The Applicant selected Standard A-1, Not Applicable/De Minimis Effect for ZoE 1 and Standard A-2, Agency Recommendation for ZoE 2. This review finds that Standard A-2 is more appropriate for ZoE 1 as discussed below.

**Discussion:** The Project operates in instantaneous run-of-river mode as required under the WQC and FERC license. Average annual generation is estimated to be 887 MWh. Impoundment water level is kept at 752.66 feet msl plus or minus 6 inches. Pond elevation sensors send data to a programmable logic controller (PLC) which recognizes the minimum elevation that must be achieved in order for the turbine unit to operate. If the pond elevation is lower than the minimum set point, the unit cannot start. Impoundment level is maintained during operation by opening and closing the unit wicket gates in response to inflow in increments of 6 cfs in each 10-minute period. During the first six months of operation the PLC system is being verified and will be adjusted as needed to maintain the correct impoundment elevation.

Fish and wildlife habitat is protected in the impoundment by the run-of-river operation. The impoundment is also subject to the Town of Westminster's bylaws for shoreline protection and the Massachusetts Wetlands Protection Act. The WQC requires an impoundment refill procedure with 90% of inflows passed downstream and 10% of inflow used to refill the impoundment after maintenance or emergency drawdowns. Thus, Standard A-2 is appropriate for the impoundment zone.

The WQC also requires a minimum flow in the de minimis bypassed reach that is "sufficient to maintain water quality standards at all times". There is no flow requirement for aquatic habitat in the bypassed reach since there is no habitat given the bedrock and boulder substrate (per the FERC Environmental Assessment<sup>3</sup>). The turbine's minimum hydraulic capacity is about 13 cfs and all flow less than that amount is spilled. This flow approximates the 14 cfs mean annual August flow (aquatic base flow) at the Project. When the turbine operates up to its maximum hydraulic capacity of about 60 cfs, leakage through the dam flashboards and a 4-inch diverter pipe provides flow in the bypass reach. All flows above 60 cfs are spilled.

Water agreements dating back to the late 1800's established control of the water flow to certain mills downstream in Fitchburg, Massachusetts. The agreements guaranteed water to all operating mills and steam plants. Today, only one paper mill remains and has a consumption rate of 200 gallons per minute which is far less than the normal run-of-river flow. Flashboard leakage and the installation of the 4-inch pipe with its gate valve maintains a minimum flow below the dam. The turbine discharge channel was constructed to allow discharge of tail water into the historic water pocket below the dam.

In early 2020 and after installation of the turbine, the Applicant prepared and filed, upon agency approval, an Operations and Flow Monitoring Plan in accordance with the WQC and FERC license.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the ecological flows criterion.

## **B: Water Quality**

**Goal:** Water Quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions.

Assessment of Criterion: The Applicant selected Standard B-2, Agency Recommendation for both ZoEs.

**Discussion:** The Whitman River is a Class B warm water fishery with designated uses including habitat for fish, other aquatic life, and wildlife including for their reproduction, migration, growth and other critical functions; and for primary and secondary contact recreation. The river is listed on the Massachusetts 2016 Integrated List of Waters<sup>4</sup> as attaining its designated uses; however, the Whitmanville Reservoir and Crocker Pond have not been assessed.

The WQC was issued by MDEP less than 10 years ago. It certified that there is "reasonable assurance" that the Project will operate in compliance with water quality standards. The WQC noted that the river would be reclassified as a cold water fishery based on a 2010 survey that

<sup>&</sup>lt;sup>3</sup> <u>https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13023022</u>

<sup>&</sup>lt;sup>4</sup> <u>https://www.mass.gov/doc/final-massachusetts-year-2016-integrated-list-of-waters/download</u>

found reproducing brook trout downstream of the dam. The classification has not been changed in the current state water quality standards nor in a pending standards amendment.

Pre-construction water quality monitoring conducted in 2010 showed that the river meets water quality standards. Both the WQC and FERC license require post-operational monitoring for DO and temperature during the first low-flow season (summer 2021). The WQC specified that DO must be at least 6.0 mg/l at all times based on the pending cold water fishery designation. If monitoring results indicate that the Project is causing depletion of DO, mitigation measures such as releasing additional flow over the dam or improving aeration at the discharge may be required.

The Dissolved Oxygen and operational plan for the facility was submitted to FERC on February 18, 2020 after agency consultation and comments were received.

Based on the application, supporting and publicly available documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the water quality criterion. However, a condition is recommended to confirm that post-operational monitoring demonstrates compliance with water quality standards.

## C: Upstream Fish Passage

**Goal:** The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by the facility.

**Assessment of Criterion:** The Applicant selected Standard C-1, Not Applicable/De Minimis Effect for both ZoEs.

**Discussion:** There are no migratory fish species present in the river. Dams on the main stem Nashua River including the Pepperell Dam create barriers to upstream passage of anadromous fish that travel from the Atlantic Ocean into the Merrimack and Nashua rivers. American eels are present in the Nashua River and the Ice House Project, the closest downstream hydroelectric project which has upstream eel passage. There is no record of eels in the Whitman River.

The Project is not currently required by resource agencies to have upstream fish passage facilities. Standard Article 11 in the FERC license reserves authority to require fish passage if agencies request it in the future. The WQC also requires installation of upstream passage for both anadromous fish and for American eel, if requested by Massachusetts Department of Fish and Wildlife (MDFW) in the future.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the upstream passage criterion. It is recommended

that Condition 4 in the current LIHI certification be removed since the requirement to install fish passage at a future date if needed, is incorporated into the license.

#### D: Downstream Fish Passage

**Goal:** The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the facility minimizes loss of fish from impoundments and upstream river reaches affected by Facility operations. All migratory species can successfully complete their life cycles and maintain healthy populations in the areas affected by the Facility.

**Assessment of Criterion:** The Applicant selected Standard D-2, Agency Recommendation for ZoE 1 and Standard D-1, Not Applicable/De Minimis Effect for ZoE 2, since once below a project there is no further Project-related impediment to downstream movement.

**Discussion:** As noted above there are no migratory fish species in the Project vicinity. Resident fish in the Whitman River include naturally producing brook trout, and these common species - bluegill, blacknose and longnose dace, banded sunfish, chain pickerel, common and golden shiner, fallfish, largemouth and smallmouth bass, pumpkinseed, white sucker, yellow bullhead and yellow perch.

As noted above, the Project is not currently required to have downstream fish passage facilities. Standard Article 11 in the FERC license reserves authority to require fish passage if agencies request it in the future. The WQC also requires installation of downstream passage for both anadromous fish and for American eel, if requested by Massachusetts Department of Fish and Wildlife (MDFW) in the future.

The WQC further required installation of full-depth trash racks with 1-inch clear spacing and an approach velocity limited to 2.0 feet/second (fps) or less. The calculated approach velocity is 0.46 fps. The Applicant states that even under high water conditions and maximum intake would not reach the 2.0 fps threshold.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the downstream passage and protection criterion. It is recommended that Condition 4 in the current LIHI certification be removed since the requirement to install fish passage at a future date if needed, is incorporated into the license.

## **E: Shoreline and Watershed Protection**

**Goal:** The facility has demonstrated that sufficient action has been taken to protect, mitigate or enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.

Assessment of Criterion: The Applicant selected Standard E-1, Not Applicable/De Minimis Effect

#### for both ZoEs.

**Discussion:** The shoreline around the impoundment (Figures 4 and 5) is mostly undeveloped with a few homes and residential lots (9 total) along the impoundment which is bordered by South Ashburnham Road on the northeast side, and by an MBTA commuter rail track on the southwest side. The shoreline surrounding the impoundment consist of heavy vegetation including woodlands, brush and weedy thicket sub-growth. Islands in Crocker Pond and the downstream reach are both forested.

The area near the dam is landscaped and kept mowed. The Town of Westminster's Crocker Pond Recreation Area is adjacent to the dam and tailrace on the southwest side and is a developed recreational area including a large parking area and impoundment beach. The Project boundary contains 4.5 acres of land including the islands and the area surrounding Project facilities.

There is no requirement in the FERC license for a shoreline management plan or similar plan. According to the Massachusetts BioMap2 report for the Town of Westminster (see application), there are no core habitats or critical natural landscapes, and there are no lands of ecological significance within the Project boundary. The Massachusetts Oliver online mapping tool (see application) shows an area of priority habitat for wood turtle that extends upstream from the inlet to Crocker Pond and encompasses a large wetlands complex outside of the Project's area of influence. Project operations would not impact this habitat given run-of-river operations and a stable impoundment elevation.

The Project was constructed under a Town of Westminster Conservation Commission Order of Conditions under the Massachusetts Wetlands Protection Act. These conditions were also referenced as a condition in the WQC and incorporated into the FERC license. Westminster also has a local wetlands bylaw that protects the quality and quantity of surface and ground water, prevents flooding and storm damage and protects wetlands-dependent wildlife and their habitat. Since the completion of construction in January 2020 there have been no activities that impact the shoreline or watershed.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the shoreline and watershed protection criterion.

## F: Threatened and Endangered Species

Goal: The facility does not negatively impact federal or state listed species.

**Assessment of Criterion Passage:** The Applicant selected Standard F-1, Not Applicable/De Minimis Effect for both ZoEs.

Discussion: An online US Fish and Wildlife Service IPaC report (see application Appendix A),

showed that only the federally-threatened Northern long-eared bat may be present in the Project vicinity. There are no critical habitats for this species. The Massachusetts Natural Heritage Bureau online map (see application) shows no hibernacula or roosting trees in the Project vicinity. Given the Project's small footprint and lack of a need to cut trees, there is no impact from the Project on that species. In the event that a tree does need to be cut, the Applicant will abide by the USFWS 4(d) rule for the species. No trees were cut for the construction of the Project. The IPaC report also lists several migratory birds protected under the Migratory Birds Treaty Act and the Bald and Golden Eagle Protection Act, including the following species. Project operations do not affect these species unless possibly if tree cutting were to occur.

- Bald eagle (also a state species of special concern)
- Black-billed cuckoo
- Bobolink
- Canada warbler
- Cape May warbler
- Prairie warbler
- Rusty blackbird
- Wood thrush

The Massachusetts Oliver mapping showed priority habitat for rare or listed species, identified by the Applicant as wood turtle habitat. The habitat area extends only to the inlet of the Whitman River into Crocker Pond and is unaffected by the Project's run-of-river operations and maintenance of stable impoundment levels.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the threatened and endangered species criterion.

## **G:** Cultural and Historic Resources Protection

**Goal:** The Facility does not unnecessarily impact cultural or historic resources that are associated with the facility's lands and waters, including resources important to local indigenous populations, such as Native Americans.

**Assessment of Criterion:** The Applicant selected Standard G-1, Not Applicable/De Minimis Effect for both ZoEs.

**Discussion:** The dam and gatehouse were originally constructed in 1933. All other Project structures including the powerhouse and extended penstock are new. The dam is not listed on the National Register of Historic Places although it could be eligible for listing. Figure 6 is a historical sign located at a small roadside viewing area. It reads:

*"Well known as the Brooks Mill site, the first mill here was a gristmill built by Dr. Zachariah Harvey in 1767 as an encouragement for families to settle in this area. A* 

sawmill was soon added, both using the waterpower of the Whitman River.

In 1772, Harvey sold this property and his house nearby at 2 Bean Porridge Hill Road, to John Brooks. It was later known as the Sawyer Mill, as it was most likely one of several properties in the Bean Porridge Hill Road area owned by Jonathan Sawyer, one of the largest land proprietors in Westminster.

Asa Brooks purchased the mills in 1814 and ran them, as well as a country store, until he died in 1852. The mills burned in 1830, but the sawmill was rebuilt and continued to operate until the turn of the century, when it burned again.

The name Brooks Mill was retained for future generations. Crocker Burbank Paper Company purchased this property in the early 1900s to ensure a water supply for papermaking in Fitchburg. They built the dam in the 1930s. In 2005, the Town of Westminster purchased this property for a swimming and recreational area."

To clarify, the town actually purchased a portion of the property located across the dam from this sign from the current Project owner for the recreational area.



#### Figure 6. Historical sign

At the time of licensing the Massachusetts State Historic Preservation Officer (SHPO) wrote that the Project is unlikely to affect any significant historic properties and determined that there would be no effect. No cultural or historic resources were identified during Project construction.

FERC license Articles 403 and 404 require that the SHPO be consulted if previously unknown cultural or historic resources are found during construction, operations, maintenance, Project modifications, land clearing or ground-disturbing activities. If needed, cultural resource studies would be required, and a Historic Properties Management Plan would be developed to protect or mitigate for any impacts.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the cultural and historic resources protection criterion.

#### **H: Recreational Resources**

**Goal:** The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.

Assessment of Criterion Passage: The Applicant selected Standard H-3, Assured Accessibility for both ZoEs.

**Discussion:** There are no Project-related recreational facilities. Standard Article 13 of the FERC license requires the Applicant to allow free public access where safe to do so, to the Project's waters and adjacent Project lands for recreation. Access is allowed except in locations around Project facilities that would be unsafe. These areas are defined by fencing and signage at both ends of the dam.

The Town of Westminster 's Crocker Pond Recreation Area has a beach, picnic tables and grills, a gazebo, playground area, restrooms, a boat launch that limits boats to no gas motors and up to 5 hp electric motors only, a swimming area and trails. The area is popular with local residents.

A letter from MDFW commenting on the 2010 license application stated that the Applicant should investigate the need for a canoe take-out in the impoundment, a portage route around the dam, and a put-in below the dam. According to the Applicant, there had been some discussion at that time regarding a put-in below the dam, but the river is very shallow, narrow, and rocky, which would not allow for canoeing during most of the recreation season (Figure 7). However, the Applicant has committed to investigating the feasibility of a put-in if a need is identified in the future.

Based on the application, supporting documentation, and FERC elibrary documents, this review finds that the Project continues to satisfy the recreational resources criterion.

Figure 7. Downstream Reach (pre-operational)



## VII. CERTIFICATION RECOMMENDATION

This review included evaluation of the application, a review of the FERC elibrary during the current LIHI term, and review of other publicly available information. Based on this evaluation, the Reviewer recommends that the Crocker Dam Project be recertified for a term of five (5) years with one condition.

**Condition 1.** The facility Owner shall provide a copy to LIHI of the final post-operational water quality monitoring report for the monitoring that will be conducted in summer 2021. The submittal shall include MDEP comments and any recommendations for modifications to

operations to ensure that water quality standards are satisfied.