

# **REVIEW OF APPLICATION FOR CERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE OF THE STEWARTS BRIDGE PROJECT**

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August 24, 2020

## **I. INTRODUCTION**

This report summarizes the review findings of the application submitted by Erie Boulevard Hydropower, LP (Applicant or licensee) a subsidiary of Brookfield Renewable Energy Group to the Low Impact Hydropower Institute (LIHI) for certification of the Stewarts Bridge Hydroelectric Project FERC (P-2047). Stewarts Bridge Hydroelectric Project (Project) is a 32.55 MW modified-peaking facility located on the Sacandaga River in Hadley, New York. On June 25, 2020 LIHI received a complete application package for certification of the Project. This current review was made using the new 2<sup>nd</sup> Edition LIHI Certification Handbook (Revision 2.04, April 1, 2020).

## **II. PROJECT'S GEOGRAPHIC LOCATION**

The Project is located at river mile 3 on the Sacandaga River in Saratoga County, New York and is the first dam on the Sacandaga River upstream of its confluence with the Hudson River and the 15th dam upstream of the Hudson River mouth. The Green Island Dam is the most downstream dam on the Hudson River, located at river mile 149 and marks the upstream extent of the Hudson River estuary. Several dams are located both upstream and downstream of the Project including numerous dams on the Hudson River mainstem (Figure 1).

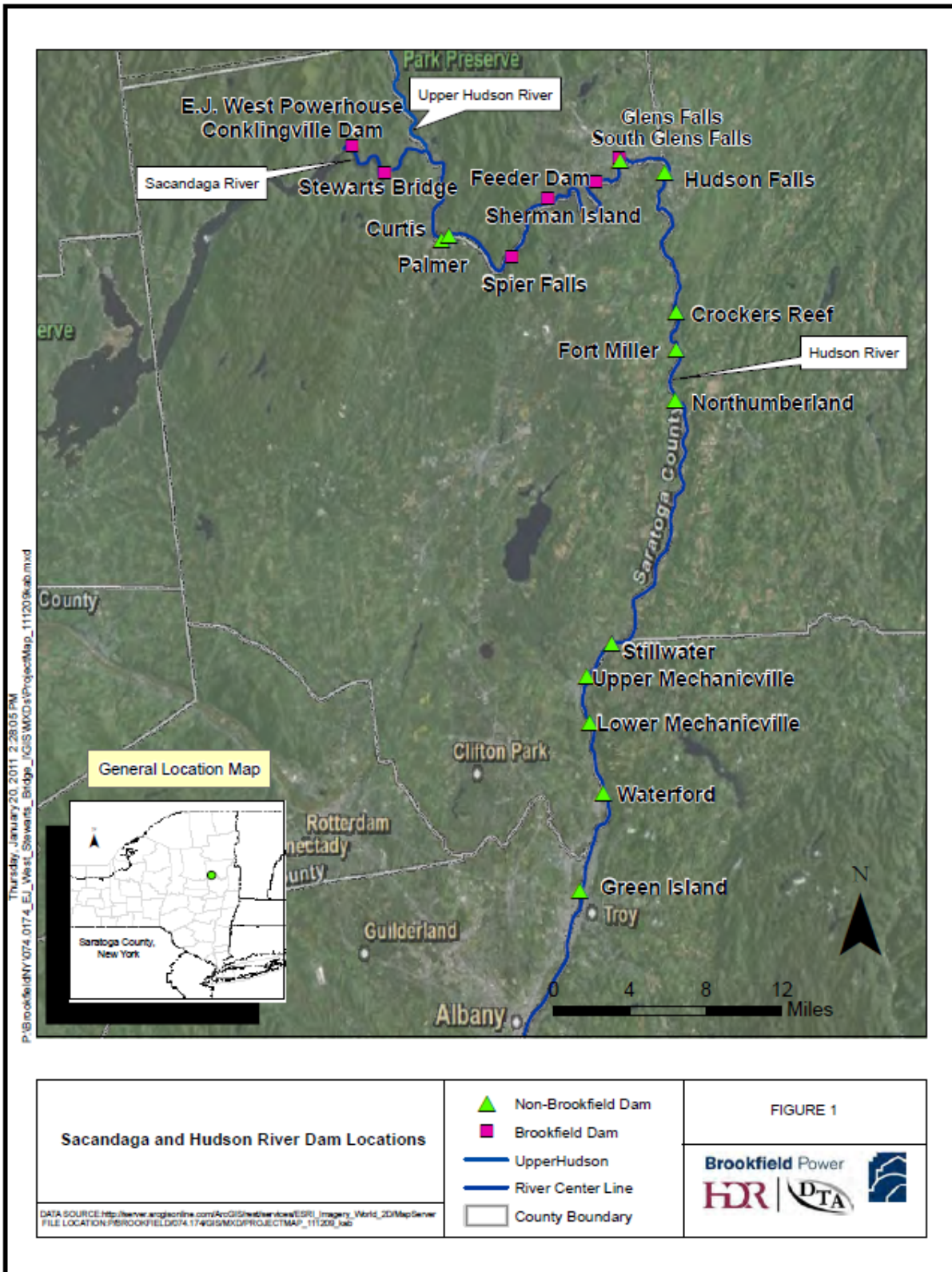


Figure 1 – Stewarts Bridge Project Location

### III. PROJECT AND IMMEDIATE SITE CHARACTERISTICS

The Stewarts Bridge Project was constructed between 1951 and 1952 and includes (see Figures 2 - 4): (1) a 1,646-foot-long, 112-foot-high earthen dam with a concrete gated 34-foot-high spillway with five tainter gates; (2) a gated intake structure with a one-inch clear-spaced trashracks; (3) an impoundment with a 480-acre surface area and usable storage of 18,600 acre-feet; (4) a 216-foot-long, 22-foot-wide steel penstock; (5) a powerhouse with one Vertical Francis turbine-generator unit with a rated capacity of 30,000 kW and; (6) an outdoor transformer, switching station, and 400-foot-long transmission line. The powerhouse has a minimum and maximum hydraulic capacity of 4,000 and 5,560 cubic feet per second (cfs) and is located approximately 225 feet downstream of the intake structure. It discharges to a boulder and cobble substrate tailrace, which extends approximately 450 feet downstream from the powerhouse and ranges in depth from 2 to 15 feet. The gated spillway discharges into a stilling basin adjacent to the powerhouse. A large pool, which is present at all flows including non-operating periods, is located immediately below the powerhouse and extends approximately 200 feet downstream.

A base flow powerhouse is located adjacent to the main powerhouse. It contains one 2,550 kW vertical shaft, axial flow turbine/generator unit which is fed by a 6.5-foot-diameter, 250- to 275-foot-long penstock. The base flow powerhouse has a minimum and maximum hydraulic capacity of 275 and 350 cfs.



**Figure 2 – Stewarts Bridge Hydroelectric Facility**



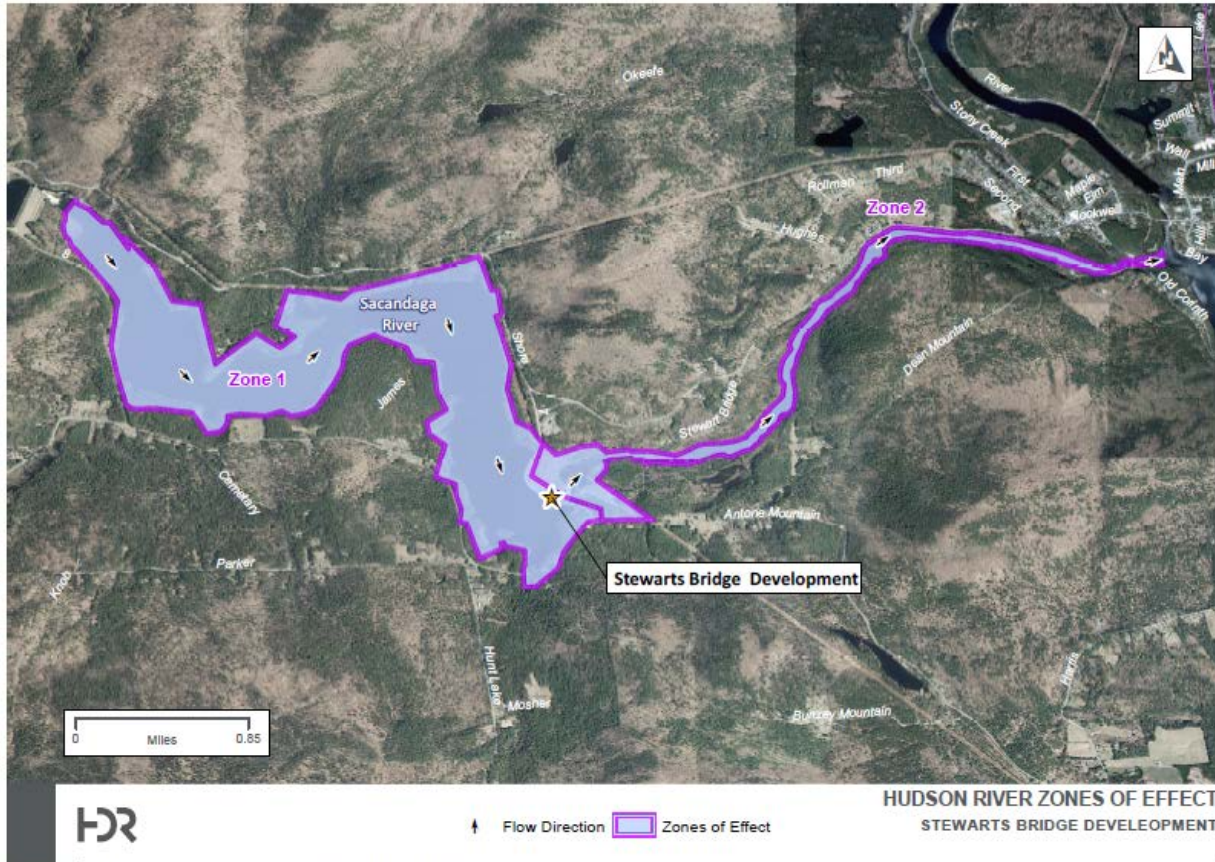
**Figure 3 – Stewarts Bridge Dam, Spillway, and Penstock**



**Figure 4 – Stewarts Bridge Powerhouse and Tailrace**

**IV. ZONES OF EFFECT AND STANDARDS SELECTED**

Two Zones of Effect (ZOE) were designated by the Applicant and were determined to be appropriate. Zone 1 includes the impoundment while Zone 2 extends from the Stewarts Bridge spillway, downstream approximately 3.0 miles to the confluence with the Hudson River (Figure 5). Table 1 shows the Standards selected for each criterion for the two ZOE. I agree with the selected standards.



**Figure 5 – Stewarts Bridge Hydroelectric Project Zones of Effect.**

**Table 1. Standards Matrix for the Stewarts Bridge Project.**

<b>Zone:</b>		<b>1: Impoundment</b>	<b>2: Downstream Reach</b>
<b>River Mile Extent:</b>		RM 6.3 to RM 3.0	RM 3.0 to RM 0.0
<b>Criterion</b>		<b>Standard Selected</b>	<b>Standard Selected</b>
<i>A</i>	<b>Ecological Flows</b>	1	2
<i>B</i>	<b>Water Quality</b>	2	2
<i>C</i>	<b>Upstream Fish Passage</b>	1	2
<i>D</i>	<b>Downstream Fish Passage</b>	2	1
<i>E</i>	<b>Shoreline and Watershed Protection</b>	1, PLUS	1, PLUS
<i>F</i>	<b>Threatened and Endangered Species</b>	3	3
<i>G</i>	<b>Cultural and Historic Resources</b>	2	2
<i>H</i>	<b>Recreational Resources</b>	2	2

**V. REGULATORY AND COMPLIANCE STATUS**

The Project was issued a license by FERC in 2002<sup>1</sup> that also incorporated many of the terms and conditions of the Settlement Agreement that the licensee filed with the Commission on April 12, 2000<sup>2</sup>. The terms and conditions of the Settlement Agreement resolved a range of resource use issues that were of concern during the licensing process. New York State Department of Environmental Conservation (NYSDEC) issued a Section 401 Water Quality Certification (WQC) for Stewarts Bridge, subject to certain conditions, on May 25, 2001<sup>3</sup>. On January 6, and supplemented April 25, and June 30, 2011, the licensee filed an application to amend its license to allow for the installation of a 2,550 kilowatt (kW) turbine generator unit designed to release required base flows. The licensee also submitted a letter to NYSDEC on January 7, 2011 requesting a new or amended WQC for the proposed installation of the base flow unit. On December 14, 2011, NYSDEC issued a modified WQC. FERC subsequently approved the amendment application on April 12, 2012 which incorporates the amended WQC<sup>4</sup>.

**VI. PUBLIC COMMENT RECEIVED OR SOLICITED BY LIHI**

<sup>1</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=9567435>

<sup>2</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=13624157>

<sup>3</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=14133>

<sup>4</sup> <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=12943432>

The application was posted for public comment on June 26, 2020 and the notice was forwarded to agencies and stakeholders listed in the application. The deadline for submission of comments was August 25, 2020. No formal comments were submitted. Based on the completeness of the application and documents available on the FERC elibrary, I did not need to contact resource agencies.

## **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 Passage:** The Applicant has appropriately selected Standard A-1, Not Applicable/De Minimis Effect for Zone 1 and Standard A-2, Agency Recommendation for Zone 2.

The Project operates in a modified peaking mode in tandem with the upstream E.J. West Project (P-2318) to accommodate scheduled releases from the Great Sacandaga Lake (P-12252), which are scheduled by the Hudson River Black River Regulating District (HRBRRD). The Stewarts Bridge impoundment has a usable storage volume of 18,600 acre-feet. In accordance with section 5.1 of the Project's 2000 Settlement Agreement, WQC Condition 7, and Article 403 of the 2002 FERC License Order, Erie operates the Project with a one-foot daily impoundment fluctuation limit and, upon issuance of the FERC license, discontinued annual spring maintenance drawdowns of approximately 15 feet. During the FERC licensing process, Erie conducted an impoundment fluctuation study which concluded that a one-foot or less daily fluctuation limit would not substantially affect aquatic resources in the impoundment. The NYSDEC and FERC subsequently agreed with this conclusion. FERC also agreed with the study conclusion that discontinuation of the annual spring drawdown would substantially improve aquatic conditions as yellow perch and walleye spawning is associated with depths greater than one foot.

WQC Condition 14 states that whenever construction and/or maintenance activities require that the water level of Stewarts Bridge Reservoir be lowered, it shall not be drawn down more than one foot per hour. During refill, the water level of the impoundment shall not be allowed to rise more than one foot per hour. During planned drawdowns in 2017<sup>5</sup> and 2018<sup>6</sup>, the Applicant informed FERC that drawdown and refill rates would not exceed one foot per hour.

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<sup>5</sup> [20170327-5238](#)

<sup>6</sup> [20200626-5191](#)

Article 401 of the license requires a Stream Flow and Water Level Monitoring Plan (SFWLMP), be developed to ensure compliance with impoundment fluctuations and base flows. The licensee filed a SFWLMP on July 14, 2003, which was approved by the Commission on July 13, 2004. The licensee modified the Plan to include new information on staff gages, stream flow monitoring, and the feasibility of internet-type posting of elevation and flow records. The final SFWLMP was filed with FERC on May 2, 2005. On July 12, 2005 FERC issued an Order Modifying and Approving SFWLMP pursuant to Article 401 of the FERC license. As part of the SFWLMP, the licensee is required to monitor headpond elevations. The licensee installed and maintains hydroacoustic sensors to monitor the impoundment.

In accordance with section 5.3 of the Settlement Agreement, FERC license Article 405, and WQC Condition 5, Erie releases base flows downstream of the dam as shown in Table 2.

**Table 2. Base Flow Schedule for Stewarts Bridge Project.**

<b>Great Sacandaga Lake Elevation (NGVD)</b>	<b>Base Flows (cfs)</b>
<b>01/01/13 to 06/01/20</b>	
Greater than or equal to elevation 752	350 (349-351)
Between elevation 749 and 752	300 (299-301)
Less than or equal to elevation 749	300 (299-301) cfs or inflow <sup>a</sup> whichever is less
<b>06/02/20 to License Expiration</b>	
Greater than or equal to elevation 752	350 (349-351)
Between elevation 750 and 752	300 (299-301)
Less than or equal to elevation 750	300 (299-301) cfs or inflow <sup>a</sup> whichever is less

a Inflow is measured at the Hope USGS gage and adjusted for drainage area only. The drainage area factor is equivalent to the drainage area at Conklingville Dam outlet (1,044 sq. miles) divided by the drainage area at the Hope gage (491sq. miles) or 2.13. Inflow shall not be adjusted for lake evaporation.

Note: If the Hudson River flow downstream of the Sacandaga River confluence is greater than 25,000 cfs, then the base flow that must be achieved by release is 200 cfs.

During the FERC licensing process, the license applicant performed a series of flow studies that included a steady-flow instream flow incremental methodology (IFIM) study, a dual flow analysis, and a Delphi-based flow demonstration study in order to address flow requirements at the Project. The studies demonstrated that implementing a base flow downstream of the Project would improve aquatic habitat in the lower Sacandaga River. Specifically, the steady-flow IFIM study showed that the amount of habitat available to most life stages of fish and invertebrates evaluated at 350 cfs was substantially greater than that available at the leakage flow of 35 to 50 cfs. The IFIM results showed that habitat available at 4,000 cfs was relatively low and most of the riffle areas that are watered at leakage flows are subjected to large increases in velocity that could flush fish downstream. The flow demonstration study evaluated flows from 200 to 4,000



cfs and demonstrated that flows between 400 and 700 cfs attained all stated biological management objectives, with an optimal flow in the vicinity of 700 cfs. FERC concluded in its 2002 Final Environmental Impact Statement (EIS) that establishing a base flow of 350 cfs at the Project would substantially improve the aquatic habitat compared to pre-licensing conditions.

On January 6, 2011 Erie filed an application with FERC to amend its license in order to construct a second powerhouse that would release the minimum flows shown in Table 2. The second powerhouse contains a single 2,550-kW Axial flow turbine with a minimum capacity of 275 cfs and maximum capacity of 350 cfs. On April 12, 2012 FERC approved the amendment application and the powerhouse has been operating since 2013.

As part of the above mentioned SFWLMP, the licensee installed hydro-acoustic sensors to monitor the tailwater elevation. A Programmable Logic Controller (PLC) monitors and adjusts generation to maintain the elevation of the reservoir. The PLC is incorporated into a Supervisory Control and Data Acquisition (SCADA) system to provide monitoring, control, and operations from the powerhouse and remotely.

A review of FERC’s eLibrary database found that while there have been deviations from the required minimum flow requirements, none have been considered a violation of the license according to FERC. Table 3 provides a summary of minimum flow deviation events that have occurred since 2015. Four of the five incidents were beyond the control of the operator, and only the oldest event in 2015 was due to operator error. Based on the reviewed information, there were no adverse environmental impacts from these short-term deviations.

**Table 3. Summary of Minimum Flow Events at Stewarts Bridge Project since 2015.**

<b>Date</b>	<b>Cause of Deviation</b>	<b>Duration of Deviation</b>	<b>Minimum Flow Recorded</b>	<b>Violation of FERC License?</b>	<b>Solution</b>
7/8/2020	The project tripped offline due to a line disturbance on the local utility transmission line	3 hours	92 cfs	No	Traveling operator was dispatched and worked to restore the outage and flows
6/21/2020	Three separate events occurred when the local utility again experienced disturbance issues on its local transmission line	1 hour	Only leakage flow	No	Traveling operator was dispatched and worked to restore the outage and flows
		58 minutes	Only leakage flow	No	
		5 hours and 3 minutes	222 cfs	No	

<b>Date</b>	<b>Cause of Deviation</b>	<b>Duration of Deviation</b>	<b>Minimum Flow Recorded</b>	<b>Violation of FERC License?</b>	<b>Solution</b>
5/29/2020	The station tripped offline due to line disturbance on the local utility transmission line	20 minutes	Only leakage flow	No	Traveling operator was dispatched and worked to restore the outage and flows
10/17/2018	Unit 2 tripped offline due to bearing vibration	1 hour and 4 minutes	211 cfs	No	Responded to the incident by evacuating workers from the downstream side of the tainter gates in order to restore flows to the required 350 cfs.
12/15/2015	The incorrect height of the Tainter gate did not allow sufficient flow to meet your minimum flow requirement	4 hours and 15 minutes	301 cfs	No	Review the procedures for operating the gate when the minimum flow unit is out of service and establish the gate settings for maintaining minimum flow

Based on my review of the application, supporting documentation, and publicly available information, the Project is operated in a manner such that it does not adversely affect fish and wildlife resources under its limited flow regime. As such, the Project satisfies the Ecological Flow Regimes 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 Passage:** The Applicant appropriately selected Standard B-2, Agency Recommendation for both Zones.

Section C of the WQC requires minimizing water quality impacts during Project maintenance and construction activities through provisions regarding erosion and sediment control, sediment analysis and disposal, dredging, use of cofferdams, maintenance flows, turbidity monitoring and notifications to NYSDEC.

Project waters in Zones 1 and 2 are not listed as impaired in NYSDEC’s 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy. The Sacandaga River in both Zones is classified by NYSDEC as Class C water, that supports fisheries and is suitable for non-contact activities. Water quality standards associated with Class C water are shown in Table 4 below.

**Table 4. NYSDEC water quality standards for Class C Waterbodies.**

<b>Physical parameter</b>	<b>Standard</b>
Water Temperature (°C)	For non-trout stream, the water temperature at the surface of a stream shall not be raised to more than 90°F at any point. For lakes, the water temperature at the surface shall not be raised more than 3°F over the temperature that existed before the additional heat of artificial origin.
Dissolved Oxygen (mg/l)	For trout spawning waters the DO concentration shall not be less than 7.0 mg/L from other than natural conditions.  For trout waters the minimum daily average shall not be less than 6.0 mg/L, and at no time shall the concentration be less than 5.0 mg/L.  For non-trout waters, the minimum daily average shall not be less than 5.0 mg/L, and at no time shall the DO concentration be less than 4.0 mg/ L.
pH	Shall not be less than 6.5 nor more than 8.5.
Turbidity (NTU)	No increase that will cause a substantial visible contrast to natural conditions
Phosphorus and nitrogen	None in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best usages.
Fecal coliform	The monthly geometric mean, from a minimum of five examinations, shall not exceed 200.

In its 2011 Environmental Assessment for the proposed amendment to authorize the base flow powerhouse construction and operation, FERC noted that no more recent water quality data was available for the Project area other than the 1997 data that was evaluated during the licensing process. For the 1997 sampling sites within the reservoir dissolved oxygen (DO) ranged from 1.4 milligrams per liter (mg/l) to 8.7 mg/l; temperature ranged from 9.0°C to 24.5°C; and pH ranged from 6.9 to 7.2 standard units (s.u.). The lower readings for DO (< 2.0 mg/l) and temperature (9.0°C) indicate that the Project reservoir was thermally stratified at the time these low readings were taken. The pH did not vary much over depth. In regard to nutrients, the Stewarts Bridge reservoir is nutrient poor particularly for phosphorus and nitrate + nitrite. For the tailwaters below the Stewarts Bridge Project and the Sacandaga River downstream, DO levels were above standards even during periods of non-generation (range: 7.1 to 8.8 mg/l) likely because the powerhouse intake draws water from the top 25 feet of the impoundment that is well oxygenated. Downstream pH levels varied from 7.0 - 7.2 s.u., while temperature ranged from 17.0 to 24.5° C.

The amended WQC stated the Project “will not contravene effluent limitations or other limitations or standards under...the Clean Water Act...provided that all of the conditions listed herein are met.” Erie contacted NYSDEC in February 2020 as part of the LIHI application for confirmation of the status of the WQC and conditions. NYSDEC confirmed the continued

validity and ongoing requirements contained within the WQC.

A review of the FERC eLibrary indicated that no issues related to water quality have occurred at the Project.

Based on my review of the application, supporting documentation, and publicly available information, the Project does not appear to impact water quality in the river and satisfies the Water Quality criterion.

## 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 Passage:** The Applicant appropriately selected Standard C-1, Not Applicable/De Minimis Effect for Zone 1 (Impoundment) and Standard C-2, Agency Recommendation for Zone 2 (Downstream Reach).

The Applicant appropriately selected Standard C-1 for the Impoundment Zone since once above a dam there are no Project-related barriers to further upstream passage.

The lower Sacandaga River contains a mix of warmwater and coldwater fish species. According to FERC's 2002 Final Environmental Impact Statement for the Project there are no obligatory migratory fish species in the lower Sacandaga River. American eel have been collected from the Feeder Dam Project (LIHI #164) impoundment and from entrainment samples at the Feeder Dam, which is 24 miles downstream of the Stewarts Bridge Dam.

No mandatory prescriptions (Section 18 or similar) or recommendations for upstream fish passage were required for the Project at the time of licensing. Section 8 of the Settlement Offer requires the licensee to contribute to the Fisheries Enhancement Fund and Erie contributes \$5,000 annually (or escalated at the rate of inflation) to the Fund, which may be used for any fishery related projects throughout New York State that meet the following purposes: (1) stream habitat improvement; (2) handicapped fishing access; (3) heritage strain brook trout restoration; or (4) public fishing rights acquisition. In accordance with license Article 411, Erie files annual reports with FERC that describe the amount of money contributed to the Fund (as well as the Great Sacandaga Lake Enhancement Fund and the Hudson/Sacandaga River Enhancement Fund) and which activities were funded during the preceding calendar year, as well as the amount of money contributed during the calendar year of the report. A review of the Project's record on the FERC eLibrary shows Erie is in compliance with the requirements of license Article 411 and

Section 8 of the Settlement Agreement.

Based on my review of the application, supporting documentation, and publicly available information, the Project satisfies the Upstream Fish Passage criterion.

#### **D. DOWNSTREAM FISH PASSAGE AND PROTECTION**

**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 reservoirs and upstream river reaches affected by Facility operations. All migratory species are able to successfully complete their life cycles and to maintain healthy populations in the areas affected by the Facility.

**Assessment of Criterion Passage:** The Applicant appropriately selected Standard D-2, Agency Recommendation for the Impoundment Zone and Standard D-1, Not Applicable/De Minimis Effect for the Downstream Reach Zone.

As noted previously in Criterion C - Upstream Fish Passage, there are no migratory species in the lower Sacandaga River. Fish species collected from the impoundment, as reported in FERC's 2002 Final Environmental Impact Statement, included blacknose dace, bluntnose minnow, creek chub, common carp, fallfish, emerald shiner, spottail shiner, white sucker, northern pike, brook trout, brown trout, rainbow trout, slimy sculpin, pumpkinseed, rock bass, smallmouth bass, walleye, and yellow perch. Smallmouth bass, rock bass and yellow perch are the more common game species in the impoundment. Spawning habitat is abundant for centrarchid species and for yellow perch, but spawning habitat for walleye is limited. The tailrace of the upstream E.J. West powerhouse and several tributaries provide the best spawning habitat for walleye spawning.

As discussed in the 2001 EIS, an entrainment study was not conducted at Stewarts Bridge but entrainment studies conducted at E.J. West and Sherman Island were used to estimate entrainment rates. Data from the E.J. West powerhouse were used to develop the entrainment estimate of 0.13 to 1.69 fish per million cubic feet of water passing through the powerhouse. Estimated mortality rates based on data from sites with similar turbine characteristics, ranged from 9 to 40 percent depending on fish species and size. Annual entrainment was estimated at 9,000 to 111,000 fish depending on whether densities from E.J. West or Sherman Island are used. Based on the E.J. West data, a total of 21 taxa would be entrained, including yellow perch, smallmouth bass, walleye, and various minnows. Using the Sherman Island data as a basis for projections, 30 taxa would be entrained including various minnows, rock bass, pumpkinseed, smelt, yellow perch and smallmouth bass.

To afford a route for downstream fish passage and minimize the potential for fish to be entrained at the Project, license Article 404 and Section 5.2 of the Settlement Agreement required in part,

that Erie modify the tainter gate near the right abutment of the dam so that a continuous bypass conveyance flow of 25 cfs is released downstream of the dam, as well as fish protection measures such as reducing the roughness of sluice spillway faces; reducing dispersion of conveyance flow releases across the spillway face; and constructing plunge pools at the toe of the spillways with a depth of approximately 25 percent of the vertical distance of any free fall. During development of the downstream fish passage route design, which FERC approved on June 10, 2008, the U.S. Fish and Wildlife Service (FWS) and NYSDEC both agreed that the proposed design was adequate.

The main Project powerhouse has a 3.5-inch horizontal clear trash rack spacing, however, since 2008 trash rack overlays were installed that reduce the trash rack spacing to one inch pursuant to license Article 404 and Section 5.2 of the Settlement Agreement. With the one-inch overlays, all but the smallest fishes (minnows and juvenile of carp and game species) would be unable to fit through the clear spacing between the trash rack. The intake for the minimum flow powerhouse taps off of the main powerhouse's pipeline and is located behind the main powerhouse's trash rack. No additional trash racks are required for the minimum flow powerhouse intake.

The Applicant appropriately selected Standard D-1 for the Downstream Reach Zone because once in this zone there are no Project-related barriers to further downstream movement.

Based on my review of the application, supporting documentation, and publicly available information, the Project satisfies the Downstream Fish Passage and Protection criterion.

## **E. SHORELINE AND WATERSHED PROTECTION**

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

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

There are no lands of ecological significance nor any critical habitats for threatened or endangered species that are under the Applicant's ownership. The FERC Project boundary covers 210 acres of land and 490 acres of water. Most of the land around the impoundment shoreline is undeveloped forestland and the presence of forest overstory on the hillsides around the impoundment generally blocks views of the impoundment from secondary roads around the shoreline. Some use around the Project is recreational (see Section VII.H below) and includes fishing, picnicking, camping, and whitewater kayaking/rafting.

The Project does not have, nor is required to have, a specific shoreline or watershed management

plan. However as mentioned previously for Criterion A – Ecological Flow, Erie operates the Project with a one-foot daily impoundment fluctuation limit and upon issuance of the FERC license discontinued the annual spring maintenance drawdowns of approximately 15 feet. Additionally, reservoir drawdowns and refill rates are not allowed to exceed one foot per hour pursuant to WQC Condition 14.

The Applicant also selected **Standard E-Plus** for both Zones.

The Applicant makes annual financial contributions of \$10,000 (adjusted for inflation) to the Hudson/Sacandaga River Enhancement Fund per Section 8 of the Settlement Agreement. Funds may be used for projects, studies, or services providing ecosystem restoration or protection from the Conklingville Dam downstream to the Feeder Dam. The funding is a consolidated contribution for Stewarts Bridge and three other projects on the Sacandaga River owned by Erie (E.J. West, Hudson River Project – Sherman Island and Spier Falls, and Feeder Dam).

A review of the FERC eLibrary indicated that no issues related to shoreline and watershed protection have occurred during the FERC licensing period.

Based on my review of the application, supporting documentation, and publicly available information, the Project is operated a manner that has a de minimis effect on the watershed. Therefore, the Project satisfies the Shoreline and Watershed Protection criterion. However, it does not appear that the level of funding when allocated across all four projects provides the equivalent land protection of at least 50% of the impoundment shoreline at this Project. Erie applied for and received the PLUS standard for the Feeder Dam Project, LHI #164 which has only 3 acres of lands above water, so it is inappropriate to apply the PLUS standard for the same action at this Project.

## **F. THREATENED AND ENDANGERED SPECIES PROTECTION**

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

**Assessment of Criterion Passage:** The Applicant appropriately selected Standard F-3, Recovery Planning and Action, for both Zones.

Neither the Settlement Agreement, WQC, nor the 2002 FERC license order contained requirements related to federal or state-listed threatened or endangered species. The license order did mention that bald eagles have been documented in the vicinity of the Stewarts Bridge Project but appear to be transient individuals.

FERC noted in its 2011 Environmental Assessment for the base flow powerhouse construction and operation that the endangered Karner blue butterfly may occur at the Project. However,

FWS informed Erie by a letter dated December 1, 2010 that Karner blue butterflies as well as Indiana bats are unlikely to occur at the Project and no further consultation pursuant to the Endangered Species Act was required. Nevertheless, FWS recommended its website be checked every 90 days until construction was completed to ensure that the licensee remained aware of current information regarding threatened and endangered species. Article 414 of the 2012 Amendment Order required the licensee to monitor the FWS' website for current information on federally listed species during construction.

In its February 12, 2020 letter to Erie, FWS stated that the endangered Indiana bat may in fact occur at the Project but there is no critical habitat in the Project boundary. Recovery actions identified in FWS' Indiana Bat Draft Recovery Plan<sup>7</sup> include hibernacula and maternity colony related recovery actions. No Indiana bat hibernacula, which typically include caves and mines, are known to exist in the immediate vicinity of Stewarts Bridge Project.

Recovery actions identified in FWS's Karner Blue Butterfly Recovery Plan<sup>8</sup> include identification and monitoring of a viable metapopulation. The Karner blue butterfly is known to be dependent on blue lupine, its only known larval food plant. Blue lupine and Karner blue butterfly have not been observed in the Project area.

In its February 27, 2020 letter to Erie, NYSDEC stated that the bald eagle (state threatened) and the pygmy snaketail dragonfly (state species of concern) may occur at the Project. Bald eagles have been observed in the general reservoir area and pygmy snaketail have been documented in the upper Hudson River. Conservation strategies outlined in NYSDEC's 2016 Conservation Plan for Bald Eagles in New York State<sup>9</sup> include limiting construction, forestry, and recreation activities in the vicinity of nest trees and deep winter roost sites. The Stewarts Bridge impoundment recreation area is closed during the winter to prevent people from accessing the upper impoundment, thereby protecting bald eagle wintering habitat. The NYSDEC has not adopted a formal recovery plan for the pygmy snaketail.

A review of the Project's record on the FERC eLibrary indicated that no other issues related to threatened and endangered species than those discussed above have occurred.

Based on my review of the application, supporting documentation, and publicly available information, I find that the Project satisfies the Threatened and Endangered Species criterion.

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<sup>7</sup> [https://www.fws.gov/midwest/Endangered/mammals/inba/pdf/inba\\_fnldrftrecpln\\_apr07.pdf](https://www.fws.gov/midwest/Endangered/mammals/inba/pdf/inba_fnldrftrecpln_apr07.pdf)

<sup>8</sup> <https://www.fws.gov/midwest/endangered/insects/kbb/pdf/kbb-final-rp2.pdf>

<sup>9</sup> [https://www.dec.ny.gov/docs/wildlife\\_pdf/nybaldeagleplan.pdf](https://www.dec.ny.gov/docs/wildlife_pdf/nybaldeagleplan.pdf)



## **G. CULTURAL AND HISTORIC RESOURCE 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 Passage:** The Applicant appropriately selected Standard G-2, Approved Plan for both Zones.

FERC noted in its 2002 Final EIS for licensing the Project that no archeological sites listed in, or eligible for listing in the National Register of Historic Places (NRHP) database have been identified within the Project boundary. FERC approved the Cultural Resources Management Plan that was required pursuant to Article 410 and the 1996 Programmatic Agreement on June 3, 2005. Per the Cultural Resources Management Plan, the licensee consulted with the New York SHPO, the Bureau of Indian Affairs, and St. Regis Mohawk Tribe in 2011 during the proposed license amendment for the base flow powerhouse. The licensee concluded that there are no archaeological sites listed in or eligible for the NRHP and the proposed amendment would not have any adverse impact on cultural or historical properties. By letters dated March 23, 2011 and February 15, 2011, the SHPO and St. Regis Mohawk Tribe, respectively, concurred with the licensee’s findings.

A review of the National Register of Historic Places database of Listed Properties did not find any cultural or historic properties within either Zone of Effect. The only two properties listed in the database for the town of Hadley, NY are well beyond the Project boundary. A review of the Project’s annual HPMP reports to FERC show that during years when ground disturbing work was performed at the Project, all required measures pertaining to the HPMP were taken prior to any ground-disturbing activities.

Based on a review of the FERC eLibrary, there does not appear to be any concern over Project operation and maintenance on cultural or historic resources. Therefore, the Project satisfies the Cultural and Historic Resource 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 appropriately selected Standard H-2, Agency Recommendations in both Zones.

Recreational facilities in the immediate vicinity of the Project include a canoe take-out and put-in portage trail, a raft launch area and a raft take-out area, two day-use areas, and campsites. Article 406 required the licensee to file a plan and schedule constructing specified recreational improvements and facilities at the Project. On November 18, 2003 FERC issued an Order Approving the Recreation Plan, which was submitted to FERC on April 29, 2003.

In the Impoundment Zone Erie maintains two recreational sites, the Stewarts Bridge Recreation Area and the canoe take-out, portage trail, and put-in area. The Stewarts Bridge Recreation Area is located on the north side of the reservoir, about half way between the Stewarts Bridge Dam and the upstream Conklingville Dam and includes a boat ramp, picnic tables (including handicapped-accessible picnic tables), grills, privies, a ball field, and parking for about 50 vehicles. The portage area contains the portage take-out and put-in sites, the portage trail, and signage. The licensee also constructed a parking area along the portage trail at the North Side of the dam that was deeded to State of New York on December 19, 2012, pursuant to license Article 406 and since removed from the Project boundary. Other recreational improvements that Erie made pursuant to license Article 406 but that are owned and maintained by other entities, or outside the FERC Project boundary include the south side portage take-out immediately downstream of the Sacandaga River confluence with the Hudson River, the north side portage take-out, also at the Hudson River confluence, the south side put-in downstream of the Stewarts Bridge Dam, the Stewarts Pond Campsites along the impoundment, and the Town of Hadley Recreation Area along the southwestern side of the impoundment off Conklingville-Lynwood road.

The downstream Zone consists of 3 miles of free-flowing river from the dam to the Hudson River confluence. Pursuant to Article 408 and Section 5.5 of the Settlement Agreement, Erie provides whitewater recreation flows of approximately 4,000 cfs from the powerhouse, when available based on elevation levels and discharges from Great Sacandaga Lake (GSL), in accordance with the following demand schedule shown in Table 5 and Table 6. Erie provides information on flow forecasts and pre-scheduled releases are made publicly available via a toll-free telephone number and a local telephone line one week in advance of the release, as well as a forecast on a day-ahead basis and provisionally on a two-day ahead basis. Information on flow forecasts and pre-scheduled releases is posted on a website a minimum of two weeks in advance of the release.

**Table 5. Sacandaga River whitewater demand schedule.**

June 1 - 22, Weekends Only		June 23 - September 8 Daily		September 9 - 23, Weekends Only	
GSL Level Curves	Whitewater hours	GSL Level Curves	Whitewater hours	GSL Level Curves	Whitewater hours
1.00	None	1.00 – 1.19	None	1.00 – 1.19	None
1.20	4	1.20	5	1.20	3
2.00	5	2.00	7	2.35	3
2.75 and above	6	2.35 and above	8	3.00 and above	6

**Table 6. Pre-scheduled whitewater releases of 4,000 cfs.**

Frequency	Time
One Tuesday in June	11:00 a.m. to 6:00 p.m.
Two Tuesdays in July	
One Tuesday in August	
Four Saturdays from July 1 through August 31	11:00 a.m. to 5:30 p.m.

Erie also permits free public access to the shoreline of the Stewarts Bridge development across Erie’s lands where Project facilities, hazardous areas and existing leases, easements, or private ownership do not preclude access. The 2013 FERC environmental inspection noted that the public safety devices (life rings, sirens, locked gates, guardrails, and warning signs) appeared to be in excellent condition and well maintained and that the Public Safety Plan appeared to be adequate for providing public safety. A review of the FERC eLibrary indicated that no issues related to recreation have occurred during the FERC licensing period.

Based on my review of the application, supporting documentation, and publicly available information, the Project continues to satisfy the Recreational Resources criterion.

**VIII. GENERAL CONCLUSIONS AND REVIEWER RECOMMENDATION**

Based on my review, I believe that the Project meets the requirements of Low Impact Certification and recommend it be certified for a five-year period with no conditions.