ENVIRONMENTAL ASSESSMENT
FOR
HYDROPOWER LICENSE

Granby Hydroelectric Project
FERC Project No. 2837-033
New York

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
888 First Street, NE
Washington, D.C. 20426

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ACRONYMS AND ABBREVIATIONS

APE	area of potential effect
Barge Canal	New York State Barge Canal
BMP	Best Management Practice
Canal Corporation	New York State Canal Corporation
certification	water quality certification
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeters
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
°C	degrees Celsius
°F	degrees Fahrenheit
EA	environmental assessment
ESA	Endangered Species Act
ft/s	feet per second
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
FWS	U.S. Fish and Wildlife Service
Historic District	New York State Barge Canal Historic District
Interior	U.S. Department of the Interior
IPaC	Information for Planning and Conservation System
mg/l	milligrams per liter
MW	megawatt
MWh	megawatt-hours
NGVD 29	National Geodetic Vertical Datum of 1929
NHPA	National Historic Preservation Act
National Register	National Register of Historic Places
Phase 1-A assessment	Phase 1-A literature review and archaeological sensitivity assessment
RM	river mile
SHPO	State Historic Preservation Office
SLELOW PRISM	St. Lawrence and Eastern Lake Ontario partnership for Regional Invasive Species Management
U.S.C.	United States Code
USGS	U.S. Geological Survey

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1.0 INTRODUCTION

1.1 APPLICATION

On March 29, 2018, Erie Boulevard Hydropower, L.P. (Erie), filed an application for a new license with the Federal Energy Regulatory Commission (Commission or FERC) to continue operating the Granby Hydroelectric Project (Granby Project or project) (FERC Project No. 2837).[1] The 10.08-megawatt (MW) Granby Project is located on the Oswego River in the town of Fulton in Oswego County, New York (figure 1). The project does not occupy federal land. The estimated average annual generation of the project (2010 to 2017) is 44,181 megawatt-hours (MWh). Erie proposes no changes to the project's capacity.

1.2 PURPOSE OF ACTION AND NEED FOR POWER

1.2.1 Purpose of Action

The purpose of the Granby Project is to provide a source of hydroelectric power. Therefore, under the provisions of the Federal Power Act (FPA), the Commission must decide whether to issue a new license to Erie for the Granby Project and what conditions should be placed on any license issued. In deciding whether to issue a license for a hydroelectric project, the Commission must determine that the project would be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation, and water supply), the Commission must give equal consideration to the purposes of: (1) energy conservation; (2) the protection, mitigation of damage to, and enhancement of fish and wildlife resources; (3) the protection of recreational opportunities; and (4) the preservation of other aspects of environmental quality.

[1] An original license for the project was issued on April 7, 1980, for a term of 40 years, with an effective date of April 1, 1980, and an expiration date of March 31, 2020. *See Niagara Mohawk Power Corporation*, 11 FERC ¶ 62,011 (1980).

Figure 1. Location and facilities of the Granby Project (Source: Google Earth and staff).

Issuing a new license for the Granby Project would allow Erie to continue to generate electricity at the project for the term of the new license, making electric power from a renewable resource available to its customers.

This environmental assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 to assess the environmental and economic effects associated with operation of the project, alternatives to the project, and makes recommendations to the Commission on whether to issue a new license, and if so, recommends terms and conditions to become a part of any license issued.

In this EA, we assess the environmental and economic effects of: (a) continued project operation as proposed in the application and as specified in the Granby Hydroelectric Project Offer of Settlement (Settlement Agreement) (proposed action); and (b) the proposed action with our recommended measures (staff alternative). We also consider the effects of the no-action alternative. The primary issues associated with relicensing the project are the effects of continued operation on water quality, fish protection, and fish passage (including American eel).

1.2.2 Need for Power

The Granby Project serves the State of New York's power system and has an installed capacity of 10.08 MW. It generates an average of approximately 44,181 MWh per year.

Power produced at the project would be used to support demand in the Northeast Power Coordinating Council (NPCC) region, which includes the State of New York. NPCC is a regional electric reliability council in the North American Electric Reliability Corporation (NERC). NERC annually forecasts electrical supply and demand on a national and regional level for a 10-year period. According to NERC's 2018 long-term reliability assessment report, annual total internal demand in the NPCC-New York region is expected to range between 32,276 MW to 32,857 MW over the period 2019 to 2028. Anticipated reserve capacity margins (generating capacity in excess of demand) in the region is projected to range from 21.57 percent to 24.12 percent of peak demand during the same period. Although anticipated capacity margins would be above the target capacity margin levels of 15 percent, the project would continue to meet part of existing load requirements as well as maintain stability of the power system. In addition, the 2015 New York State Energy Plan sets forth a goal for the state utilities to source 50 percent of their electric generation from renewable energy sources by 2030. If issued a new license, the power from the Granby Project would also help meet the renewable energy goal of the state.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

Any license for the Granby Project is subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are described in the following sections.

1.3.1 Federal Power Act

1.3.1.1 Section 18 Fishway Prescription

Section 18 of the FPA, 16 United States Code (U.S.C.) § 811, states that the Commission is to require the construction, operation, and maintenance by a licensee of such fishways as may be prescribed by the Secretaries of the U.S. Department of Commerce or the U.S. Department of the Interior (Interior). On April 4, 2019, Interior timely filed a preliminary fishway prescription for the project and requested that the Commission include a reservation of authority to prescribe fishways under section 18 in any license issued for the project. Interior's preliminary fishway prescription is consistent with the measures proposed by Erie, which are summarized in section 2.2.2, *Proposed Project Operation and Environmental Measures*.

1.3.1.2 Section 10(j) Recommendations

Under section 10(j) of the FPA, 16 U.S.C. § 803(j), each hydroelectric license issued by the Commission must include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, or enhancement of fish and wildlife resources affected by the project. The Commission is required to include these conditions unless it determines that they are inconsistent with the purposes and requirements of the FPA or other applicable law. Before rejecting or modifying an agency recommendation, the Commission is required to attempt to resolve any such inconsistency with the agency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

On April 4, 2019, Interior timely filed one recommendation under section 10(j), as summarized in table 7, in section 5.3, *Fish and Wildlife Agency Recommendations*. In section 5.3, we also discuss how we address the recommendation and how it complies with section 10(j).

1.3.2 Clean Water Act

Under section 401(a)(1) of the Clean Water Act, 33 U.S.C. § 1341(a)(1), a license applicant must obtain either a water quality certification (certification) from the appropriate state pollution control agency verifying that any discharge from a project would comply with applicable provisions of the Clean Water Act, or a waiver of the

certification by the appropriate state agency. The failure to act on a request for certification within a reasonable period of time, not to exceed one year, after receipt of the request constitutes a waiver.

On April 2, 2019, Erie applied to the New York State Department of Environmental Conservation (New York DEC) for a section 401 certification for the Granby Project. New York DEC received the application on the same day.[2] New York DEC has not yet acted on the certification request.

1.3.3 Endangered Species Act

Section 7 of the Endangered Species Act (ESA), 16 U.S.C. § 1536, requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of such species. On September 3, 2019, Commission staff requested an official species list for the project through the U.S. Fish and Wildlife Service's (FWS) Information for Planning and Conservation (IPaC) system. The official species list indicates that three federally listed species have the potential to occur in the project area: the endangered Indiana bat (*Myotis sodalist*), the threatened northern long-eared bat (*Myotis septentrionalis*), and the threatened bog turtle (*Clemmys muhlenbergii*).[3]

Our analysis of project effects on threatened and endangered species is presented in section 3.3.4, *Threatened and Endangered Species*, and our recommendations are included in section 5.1, *Comprehensive Development and Recommended Alternative*. Based on the available information, we conclude that relicensing the Granby Project, with implementation of the proposed measures in Erie's Bat and Bald Eagle Protection Plan, filed as part of the Settlement Agreement, is not likely to adversely affect the Indiana or northern long-eared bat. We also conclude that relicensing would have no effect on the bog turtle since no suitable habitat is located at the project. By letter filed April 4, 2019, FWS determined that, based on the measures outlined in Erie's Bat and Bald Eagle Protection Plan, any take that may occur incidental to the Granby Project is not prohibited under the final 4(d) rule[4] for the northern long-eared bat, and the Bat and Bald

[2] Erie filed a copy of the receipt of application from New York DEC on April 2, 2019.

[3] *See* official species list memorandum, filed September 5, 2019.

[4] On January 14, 2016, FWS issued a final 4(d) rule regarding the northern long-eared bat that prohibits the following activities in areas of the country impacted by white-nose syndrome: incidental take within a hibernation site; tree removal within 0.25 mile

Eagle Protection Plan will protect the Indiana bat. FWS also determined that no further ESA coordination or consultation is required for the relicensing of the Granby Project.

1.3.4 Coastal Zone Management Act

Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), 16 U.S.C. § 1456(3)(A), the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state's coastal zone management agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 6 months of its receipt of the applicant's certification.

In an e-mail dated March 18, 2015, and filed with Erie's pre-application document, the New York State Department of State indicates that the Granby Project is not located within New York State's coastal zone and the agency does not anticipate the need for a consistency review because effects on the coastal zone are unlikely.

1.3.5 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108, requires that the Commission take into account the effects of its actions on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.[5] Historic properties are those that are listed or eligible for listing on the National Register of Historic Places (National Register). The regulations implementing section 106 of the NHPA also require that the Commission seek concurrence with the state historic preservation office (SHPO) on any finding involving effects or no effects on historic properties and consult with interested Indian tribes or Native Hawaiian organizations that attach religious or cultural significance to historic properties that may be affected by an undertaking. In this document, we also use the term "cultural resources" for properties that have not been determined eligible for listing on the National Register. Cultural resources represent things, structures, places, or

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of a known, occupied hibernaculum; and cutting or destroying known occupied maternity roost trees, or any other trees within 150 feet of that maternity roost tree, during the pup-rearing season (June 1 through July 31) (FWS, 2016a).

[5] An undertaking means "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval." 36 Code of Federal Regulations (C.F.R.) § 800.16(y). Here, the undertaking is the potential issuance of a new license for the Granby Project.

archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic.

Commission staff designated Erie as its non-federal representative for the purposes of conducting section 106 consultation under the NHPA on May 19, 2015. Pursuant to section 106, and as the Commission's designated non-federal representative, Erie initiated consultation with the New York State Office of Parks, Recreation, and Historic Preservation, which functions as the New York SHPO, to identify historic properties, determine National Register eligibility, and assess potential adverse effects on historic properties within the project's area of potential effects (APE). The only property within the APE that is listed on the National Register is the New York State Barge Canal Historic District (Historic District),[6] whose boundaries incorporate the Granby tailrace and forebay, but not the powerhouse.

In 2016, Erie conducted a Phase 1-A literature review and archaeological sensitivity assessment (Phase 1-A assessment) of the Granby Project APE. Erie submitted the results of the Phase 1-A assessment to the New York SHPO, which indicated that project operation would not adversely affect the Historic District. In correspondence dated January 6, 2017,[7] the New York SHPO determined that based on its review, no historic properties would be affected by the Granby Project relicensing. As a result of these findings, no further action is required. However, any future discoveries of cultural or historic resources made by Erie could require consultation with the New York SHPO.

1.4 PUBLIC REVIEW AND COMMENT

The Commission's regulations (18 C.F.R § 16.8) require an applicant to consult with appropriate resource agencies, tribes, and other entities before filing an application for a license. This consultation is the first step in complying with the Fish and Wildlife Coordination Act, ESA, NHPA, and other federal statutes. Pre-filing consultation must be completed and documented according to the Commission's regulations.

[6] The Historic District is a 524-mile network of canals, canalized rivers, and lakes that allows commercial and pleasure vessels to pass from the Atlantic Ocean to the Great Lakes. It is owned and operated by the New York State Canal Corporation and is composed of the Erie Canal, Champlain Canal, Oswego Canal, and the Cayuga-Seneca Canal. Construction of the canal system began in the 1820's.

[7] *See* p. 84 of Appendix A in the license application.

1.4.1 Scoping

Before preparing this EA, we conducted scoping for the Granby Project to determine what issues and alternatives should be addressed. A scoping document (SD1) was issued on September 28, 2018. It was noticed in the *Federal Register* on October 9, 2018. No entities filed comments on SD1; therefore, staff did not prepare a second scoping document.

1.4.2 Interventions

On September 28, 2018, the Commission issued a notice accepting the license application. The notice set November 27, 2018, as the deadline for filing protests and interventions. In response to the notice, the following entities filed interventions:[8]

Intervenors	Date Filed
Interior	November 20, 2018
New York State Canal Corporation	November 27, 2018

1.4.3 Comments on the Application

On November 16, 2018, the Commission issued a Ready for Environmental Analysis notice setting January 15, 2019 as the deadline for filing comments, recommendations, terms and conditions, and prescriptions. On December 14, 2018, the Commission granted an extension of time, until February 28, 2019, to file comments, recommendations, terms and conditions, and prescriptions due to ongoing Settlement Agreement discussions among entities participating in the relicensing process. On February 11, 2019, the Commission granted a second extension of time, until April 4, 2019, due to the funding lapse at certain federal agencies between December 22, 2018 and January 25, 2019. The following entity commented:

Commenting agency	Date Filed
Interior	April 4, 2019

1.5 SETTLEMENT AGREEMENT

On March 29, 2019, Erie, on behalf of itself, FWS, and New York DEC, filed a Settlement Agreement. Commission staff issued public notice of the Settlement Agreement on April 5, 2019, establishing an April 28, 2019 deadline to file comments and a May 13, 2019 deadline to file reply comments. On April 12, 2019, FWS filed comments supporting the Settlement Agreement. No other entities commented. The

[8] On April 3, 2015, New York State Council of Trout Unlimited filed for intervention.

Settlement Agreement purports to resolve, among the settling parties, various issues associated with issuance of a new license for the project, including project operation, fisheries, wildlife, water quality, and recreation.

Erie filed reply comments on April 25, 2019. In its comments, Erie reiterates its support for the Settlement Agreement and states that it serves as the final agreement reached as a result of comprehensive discussions held with FWS and New York DEC. Erie requests that the Commission incorporate language included in the Settlement for a 34-year license term into any new license issued.[9]

[9] Erie states that a 34-year license term would allow for the alignment of future Granby Project relicensing proceedings with the Oswego River Project No. 2474; the Granby Project shares a dam with the Fulton Development of the Oswego Project. Requesting a specific license term is beyond the scope of Commission staff's analysis within this EA. The Commission will determine an appropriate license term in any license issued for the project.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative as the baseline environmental condition for comparison with other alternatives.

2.1.1 Existing Project Facilities

The Granby Project is located on the Oswego River in the town of Fulton in Oswego County, New York, and is adjacent to the Lower Fulton Dam (owned by the State of New York) and Fulton Development powerhouse associated with the Oswego River Project No. 2474.[10] The Granby Project and the Fulton Development share a bypassed reach and utilize the same impoundment.

The Granby Project consists of the following facilities: (1) an 88-foot-wide reinforced concrete intake structure that includes two bays containing trashracks with 4.875-inch spacing and fixed-roller, vertical-lift type gates; (2) a 17-foot-wide log sluice opening adjacent to the intake structure; (3) a 112-foot-long, 88-foot-wide concrete and steel powerhouse containing two 5.04 MW turbine-generator units, with a total capacity of 10.08 MW; (4) a 3,000-foot-long, 100-foot-wide tailrace; (5) two 4.16-kilovolt, 120-foot-long underground generator leads; (6) a 60-foot-long by 48-foot-wide electrical switchyard; and (7) appurtenant facilities. There are no project recreation facilities.

The project boundary includes the forebay, intake structure, powerhouse, tailrace, and switchyard.

2.1.2 Project Safety

The Granby Project has been operating for more than 39 years under the existing license issued in 1980, and during this time, Commission staff has conducted operational inspections focusing on the continued safety of the structures, identification of unauthorized modifications, efficiency, and safety of operations, compliance with the terms of the license, and proper maintenance. As part of the relicensing process, Commission staff will evaluate the continued adequacy of the proposed project facilities under a new license. Special articles would be included in any license issued, as appropriate. Commission staff will continue to inspect the project during the new license term to assure continued adherence to Commission-approved plans and specifications,

[10] *See Erie Boulevard Hydropower, L.P.*, 109 FERC ¶ 62,141 (2004).

special license articles relating to construction (if any), operation and maintenance, and accepted engineering practices and procedures.

2.1.3 Existing Project Operation

The Granby Project and the Fulton Development (licensed as part of the Oswego River Project) are located at opposite ends of the Lower Fulton Dam and share a bypassed reach and associated impoundment (figure 1). Project operations at the Granby Project are managed in such a way that they do not interfere with the Oswego River Project license requirements, as set forth in a 2004 Offer of Settlement,[11] for impoundment fluctuations,[12] Fulton Development base flows,[13] and Fulton Development bypassed reach flows.[14]

The Granby Project turbines each have a maximum hydraulic capacity of 3,000 cfs for a total hydraulic capacity of 6,000 cfs.[15] The Fulton Development has a maximum hydraulic capacity of 1,115 cfs. Erie monitors the impoundment water level with a

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[11] The February 19, 2004, Oswego River Offer of Settlement filed by Erie on behalf of itself, New York DEC, FWS, National Park Service, New York Rivers United, the Adirondack Mountain Club, Trout Unlimited, Izaak Walton League, and the New York State Conservation Council included measures for the licensing of the Oswego River Project FERC No. 2474 and amending the Oswego Falls Project FERC No. 5984.

[12] Article 403 of the Oswego River Project license allows a 0.5-foot fluctuation at the Fulton Development from the permanent crest of the Lower Fulton Dam (334.0 feet) or from the top of the 6-inch flashboards, when in place.

[13] Article 404 of the Oswego River Project license includes a base flow requirement from the Fulton Development of 300 cfs or inflow, whichever is less, and 800 cfs, or inflow, during the walleye spawning season. These flows can be provided either through the Fulton Development powerhouse, or over the Lower Fulton Dam as spillage.

[14] Article 405 of the Oswego River Project license requires that 75 cfs be released at the Fulton Development through the sluice gate adjacent to the Fulton powerhouse to provide a fish-friendly flow to the upper portion of the bypassed reach.

[15] Both Granby Project turbines have a minimum hydraulic capacity of 2,500 cfs, however, Erie does not begin operation of a turbine-generator unit until it can operate the unit at its full maximum turbine hydraulic capacity of 3,000 cfs.

headpond transducer, and calculates impoundment inflows.[16] Erie begins operating the Granby Project powerhouse when there is sufficient inflow to the impoundment to: (1) maintain the Fulton Development's 300-cfs base flow, 0.5-foot maximum impoundment fluctuation, and 75-cfs bypassed reach flow requirements, and (2) operate one of the Granby Project's generating units at the maximum turbine hydraulic capacity of 3,000 cfs (for a total of 3,375 cfs).

If the Fulton Development is operating at its full capacity of 1,115 cfs, then the sustained inflow required to operate the Granby Project while still maintaining the Fulton Development's flow and impoundment fluctuation requirements is approximately 4,190 cfs (i.e., 3,000 cfs through one Granby Project generating unit plus 1,115 cfs through the Fulton Development's powerhouse plus 75 cfs released to the Fulton Development's bypassed reach). Inflows greater than the Fulton powerhouse capacity of 1,115 cfs and the 75-cfs Fulton Development's bypassed reach flow requirement (i.e., 1,190 cfs), but less than 3,375 cfs, are spilled over the Lower Fulton Dam. If the impoundment fluctuation, bypassed reach flow, and powerhouse base flow requirements at the Fulton Development are being met, flows up to 6,000 cfs are diverted through the Granby powerhouse. During high flows when both the Granby Project and the Fulton Development are operating at maximum hydraulic capacity, all excess flow is spilled over the dam.

The Granby Project is staffed part time by traveling operators and is monitored remotely from Erie's parent company, Brookfield Renewable Energy Group's North America System Control Center on a 24-hour-per-day basis. Operating conditions monitored by the control center include generation, headwater levels, and upstream and downstream river flows in the Oswego River.

For the period 2010 through 2017, the estimated average annual generation at the project was about 44,181 MWh. At the rated plant capacity of 10.08 MW, the annual plant capacity factor is about 50 percent.

2.1.4 Existing Environmental Measures

The current section 401 certification includes a requirement, modified in 1994,[17] for dissolved oxygen monitoring and additional flow releases for dissolved oxygen

[16] Erie monitors operational conditions at the Oswego Falls Project and calculates the inflow to the Fulton-Granby impoundment. The headpond elevation and upstream flows also provide inflow information for operation of the Granby Project.

[17] Procedure for Granby Water Quality Protection, April 27, 1994 Modification, filed on June 13, 1994. Accession No. 19940617-0189.

mitigation, if needed. Under this requirement, from May 1 to October 31, Erie collects dissolved oxygen readings from the upstream face of the pier between the Lower Fulton Dam and Granby forebay when project inflows from the Oswego Falls Project are less than 1,500 cfs. When prescribed dissolved oxygen levels[18] are not achieved, the Granby Project is required to provide additional flow (944 cfs or inflow) at a point approximately 100 yards below the Route 3 bridge (the confluence of the Fulton tailrace and the bypassed reach). To accomplish this, the certification states that Erie may stop generation and spillage, reduce generation and gated releases, or a combination of reduced generation with spillage and gated releases to reaerate downstream waters.

2.2 ERIE'S PROPOSAL

2.2.1 Proposed Project Facilities

As described in the Settlement Agreement, Erie proposes to install new seasonal fish passage and protection infrastructure, including an eel ladder for upstream passage, seasonal trashracks with 1-inch clear spacing, and a downstream fish passage structure with an 80-cfs attraction flow.

2.2.2 Proposed Project Operation and Environmental Measures

Erie proposes to continue operating the project as it does currently under the existing license for the project. As described in the Settlement Agreement, Erie proposes the following environmental measures:

Aquatic Resources

- Install seasonal trashracks from May 1 through November 30 with either 1-inch clear spacing or equivalent protection (e.g., seasonal overlays) within 5 years of the issuance and acceptance or the effective date of any new license, whichever is later, and operate in accordance with the Trashrack and Fishway Operations and Maintenance Plan (section 3.1.1.1 of the Settlement Agreement);

- Install and maintain a seasonal downstream fish passage structure for the downstream movement of American eel, lake sturgeon, and other fish species found in the Oswego River within 18 months of the issuance and acceptance or

[18] Dissolved oxygen readings are measured at the Granby Project intake at the 8- to 9-foot depth (mid-depth in the water column). The dissolved oxygen concentration thresholds vary based on the project inflow: 1,250 to 1,500 cfs [4.5 milligrams per liter (mg/L)], 1,000 to 1,250 cfs (5.0 mg/L), less than 1,000 cfs (5.5 mg/L).

the effective date of any new license, whichever is later (section 3.1.1.2 of the Settlement Agreement);

- Exert reasonable best efforts to provide a seasonal (May 1 to November 30) attraction flow of 80 cfs through the existing project log sluice to facilitate fish passage when the project is operating (section 3.1.1.2.1 of the Settlement Agreement); and

- Install a seasonal (June 15 to September 15) American eel ladder within 4 months of the issuance and acceptance or the effective date of the new license, whichever is later, to facilitate upstream eel passage (section 3.1.1.3 of the Settlement Agreement).

Terrestrial Resources and Threatened and Endangered Species

- Implement the proposed Invasive Plant Species Management Plan filed with the Settlement Agreement; and

- Implement the proposed Bat and Bald Eagle Protection Plan filed with the Settlement Agreement.

2.2.3 Modifications to Applicant's Proposal – Mandatory Conditions

The following mandatory conditions have been provided and are evaluated as part of Erie's proposal because they are consistent with the proposed Settlement Agreement.

Section 18 Fishway Prescriptions

Interior's preliminary section 18 prescription requires Erie to install seasonal 1-inch trashracks and provide upstream and downstream passage for American eel as described above in section 2.2.2, and in sections 3.1.1.1, 3.1.1.2, and 3.1.1.3 of the Settlement Agreement. In addition to the specific fish passage measures listed above, Interior requests a reservation of authority to prescribe fishways at the project under section 18 of the FPA during the term of any license issued by the Commission.

2.3 STAFF ALTERNATIVE

Under the staff alternative, the project would include Erie's proposed measures and the following additional measures or modifications:

- Develop an erosion and sediment control plan to minimize effects related to constructing the proposed downstream fish passage facilities and modifying the trashracks;

- Define "reasonable best efforts," as described in section 3.1.1.2.1 of the Settlement Agreement, in providing a seasonal (May 1 to November 30) attraction flow of 80 cfs through the Granby Project's log sluice when the Granby Project is operating subject to the operating requirements and allowances of the Oswego River Project license;[19]

- Consult with the New York SHPO if previously unidentified cultural resources are encountered during the term of the license to ensure the proper treatment of these resources and discontinue all ground-disturbing activities until the proper treatment of the resources is established.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

We considered several alternatives to Erie's proposal, but eliminated them from further analysis because they are not reasonable in this case. They are: (1) issuing a non-power license, (2) federal takeover of the project, and (3) retiring the project.

2.4.1 Issuing a Non-power License

A non-power license is a temporary license that the Commission would terminate when it determines that another governmental agency will assume regulatory authority and supervision over the lands and facilities covered by the non-power license. At this time, no agency has suggested a willingness or ability to take over the project. No party has sought a non-power license, and we have no basis for concluding that the Granby Project should no longer be used to produce power.

2.4.2 Federal Government Takeover

Federal takeover and operation of the Granby Project would require congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate, and no federal agency has expressed interest in operating the project.

[19] Section 3.1.1.2.1 of the Settlement Agreement states that the attraction flow would be provided by maintaining the impoundment at the top of the flashboards. However, the Lower Fulton Dam, the impoundment, and flashboards are part of the Oswego River Project.

2.4.3 Retiring the Project

As the Commission has previously held, decommissioning is not a reasonable alternative to relicensing a project in most cases, when appropriate protection, mitigation, and enhancement measures are available.[20] The Commission does not speculate about possible decommissioning measures at the time of relicensing, but rather waits until an applicant actually proposes to decommission a project, or there are serious resource concerns that cannot be addressed with appropriate measures, making decommissioning a reasonable alternative.[21] This is consistent with NEPA and the Commission's obligation under section 10(a) of the FPA to issue licenses that balance development and environmental interests.

In this case, the Lower Fulton Dam is not part of the Granby Project, therefore, project retirement would not include dam removal,[22] but rather would require denying the relicense application and surrender or termination of the existing license with appropriate conditions.

No participant has recommended project retirement, and we have no basis for recommending it. The power produced by the Granby Project would be lost if the project were retired, and replacement power would need to be found. There also could be significant costs associated with retiring the project's powerhouse and appurtenant facilities.

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[20] *See, e.g., Eagle Crest Energy Co.,* 153 FERC ¶ 61,058, at P 67 (2015); *Public Utility District No. 1 of Pend Oreille County*, 112 FERC ¶ 61,055, at P 82 (2005); *Midwest Hydro, Inc*., 111 FERC ¶ 61,327, at PP 35-38 (2005).

[21] *See generally Project Decommissioning at Relicensing; Policy Statement, FERC Stats. & Regs., Regulations Preambles* (1991-1996), ¶ 31,011 (1994); *see also City of Tacoma, Washington*, 110 FERC ¶ 61,140 (2005) (finding that unless and until the Commission has a specific decommissioning proposal, any further environmental analysis of the effects of project decommissioning would be both premature and speculative).

[22] In the event that the Commission denies relicensing a project or a licensee decides to surrender an existing project, the Commission must approve a surrender "upon such conditions with respect to the disposition of such works as may be determined by the Commission." 18 C.F.R. § 6.2 (2018). This can include simply shutting down the power operations, removing all or parts of the project, or restoring the site to its pre-project condition.

Project retirement could involve disabling or removing equipment used to generate power or certain project works could remain in place and be used for other purposes. This approach would require the State of New York to assume regulatory control and supervision of the remaining facilities. However, no participant has advocated this alternative, nor do we have any basis for recommending it. Removal of project works would be more costly than retiring it in place, and removal could have substantial, negative environmental effects.

3.0 ENVIRONMENTAL ANALYSIS

In this section, we present: (1) a general description of the project vicinity; (2) an explanation of the scope of our cumulative effects analysis; and (3) our analysis of the proposed action and recommended environmental measures. Sections are organized by resource area (aquatics, recreation, etc.). Under each resource area, historic and current conditions are first described. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures, and any potential cumulative effects of the proposed action and alternatives. Staff conclusions are discussed in section 5.1, *Comprehensive Development and Recommended Alternative*.[23]

3.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The Oswego River Basin (figure 2) has an area of 5,121 square miles and contains a diverse system of streams, lakes, and canals. Water flows from the Finger Lakes in central New York into low-gradient rivers, which are part of the New York State Barge Canal (Barge Canal), and ultimately to Lake Ontario. A geographic area that plays a vital role in the flow regime of the watershed is the Clyde/Seneca River and Oneida Lake Troughs, two belts of lowlands running west-to-east through which the Barge Canal flows.

Water in the Clyde/Seneca River Troughs flows from the outlet of Keuka Lake to Seneca Lake, from Seneca Lake to Cayuga Lake, and then from Cayuga Lake to the Barge Canal. Further downstream (to the east), the canal receives additional water from the Owasco, Skaneateles, and Otisco Lake watersheds, which, like Canandaigua Lake to the west, are at higher elevations and drain readily to the Clyde/Seneca River Trough. Similarly, the uplands around Oneida Lake drain to the Oneida Lake Trough from the surrounding watershed, and the additive contribution of these lake outflows to the Barge Canal results in a bottleneck at Three Rivers junction (the confluence of the Seneca, Oneida, and Oswego Rivers). This junction receives water from 96 percent of the Oswego River Basin but is within the flattest, slowest-moving reach of the Barge Canal and the Oswego River Basin. Conversely, the gradient in the Oswego River downstream of Fulton, New York increases markedly to about 4 feet per mile, and allows the water to flow more readily toward Lake Ontario.

[23] Unless otherwise noted, the sources of our information are Erie's license application filed on March 29, 2018, Erie's responses to our requests for additional information filed on August 24, 2018 and October 4, 2018, and the Settlement Agreement filed on March 29, 2019.

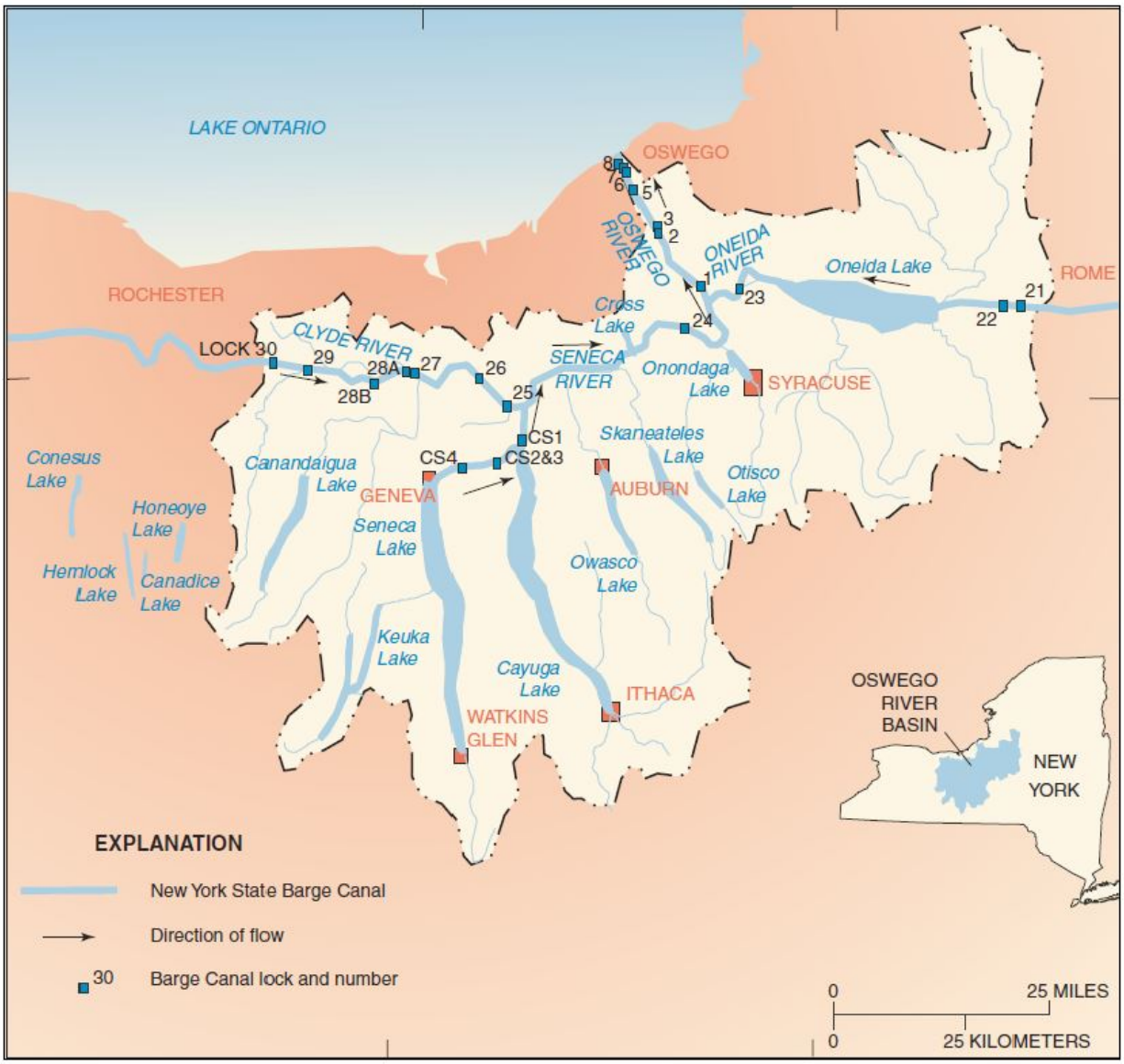

Figure 2. Map of Oswego River Basin (Source: license application).

The Oswego River, which is 23.7 miles long, functions as the Oswego Canal and connects the Erie Canal from the Three Rivers junction to Lake Ontario. The navigation channel of the Oswego Canal is 14 feet deep and 120 feet wide, although it is wider in some places. The Oswego Canal contains seven locks and dams that are owned and operated by the New York State Canal Corporation (Canal Corporation). Figure 3 shows the locks and hydroelectric projects from upstream to downstream (south to north) on the Oswego Canal:

- Lock 1, River Mile (RM) 2.1, Phoenix Hydroelectric Project (FERC No. 4113).[24]
- Lock 2, RM 11.5, Upper Fulton Dam, Oswego Falls (East and West) Project (FERC No. 5984).[25]
- Lock 3, RM 12, Lower Fulton Dam, Granby Hydroelectric Project (FERC No. 2837) and the Fulton Development of the Oswego River Project (FERC No. 2474).
- Lock 4 does not exist.
- Lock 5, RM 18.5, Minetto Development of the Oswego River Project (FERC No. 2474).
- Lock 6, RM 21.8, High Dam Project (FERC No. 10551).[26]
- Lock 7, RM 22.5, Varick Development of the Oswego River Project (FERC No. 2474).
- Lock 8, RM 22.9, no hydroelectric facilities.

[24] *See Long Lake Energy Corporation,* 34 FERC ¶ 62,639 (1986).

[25] *See Niagara Mohawk Power Co.*, 74 FERC ¶ 62,138 (1996).

[26] *See City of Oswego, NY*, 57 FERC ¶ 62,139 (1991).

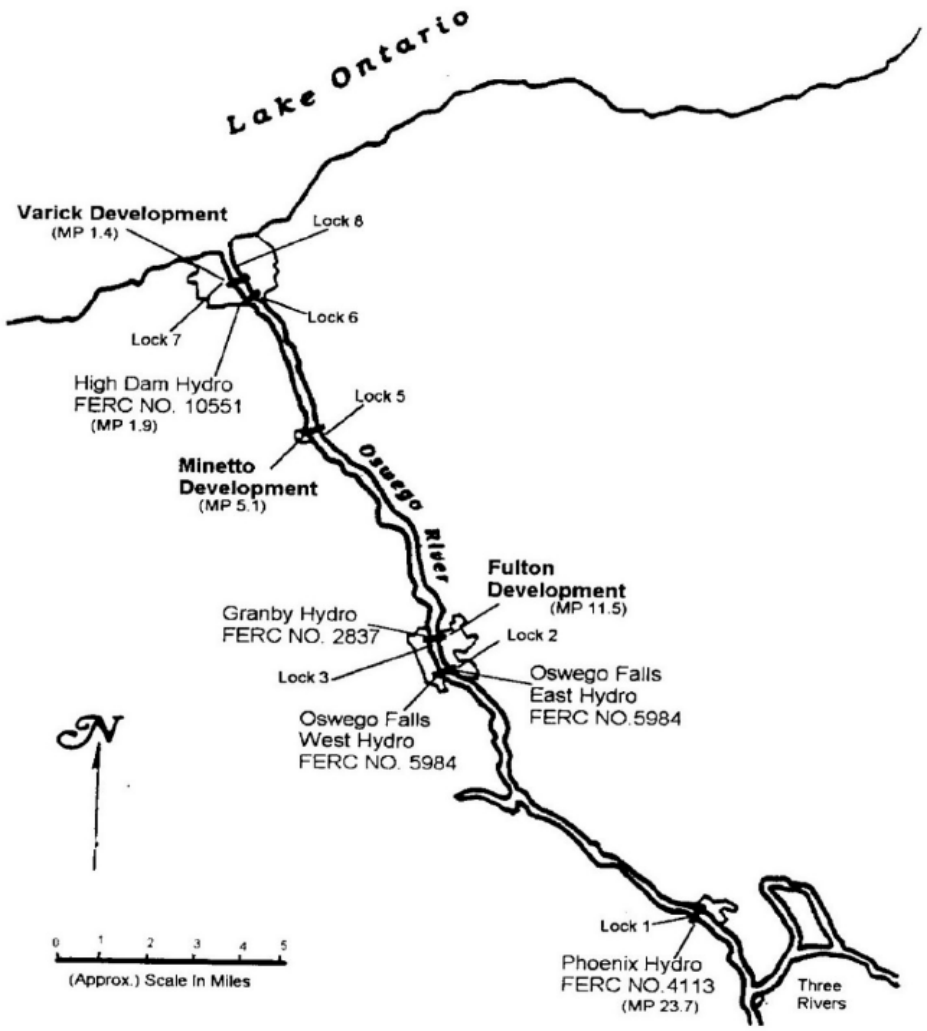

Figure 3. Location of Hydropower Projects on the Oswego River (Source: Oswego River Project [Fulton, Minetto, and Varick Developments] No. 2474 final environmental assessment, 2001).

3.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

According to the Council of Environmental Quality's regulations for implementing the National Environmental Policy Act (40 C.F.R. § 1508.7), a cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

3.2.1 Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of the proposed action's effect on the resources, and contributing effects from other hydropower and non-hydropower activities within the Oswego River Basin. Based on our review of the license application and agency comments, we identified water quality and fisheries as having the potential to be cumulatively affected by the proposed project, in combination with other past, present, and foreseeable future activities. These other activities include the operation of other hydropower plants, navigation, and fish restoration efforts. We have chosen different geographic scopes for water quality and fisheries because we expect the effects of project operation and any mitigation measures to vary for both resources.

The geographic scope for water quality includes the Oswego River main stem between the Oswego Falls Project (about 0.5 mile upstream of Granby) and the entrance to Lake Ontario (11 miles downstream of Granby). We chose this geographic scope because the operation of the Granby Project, in combination with other developments on the main stem of the Oswego River, may cumulatively affect water quality in this reach of the Oswego River.

The geographic scope for fisheries includes the entire Oswego River Basin (excluding Lake Ontario). We chose this geographic scope because the operation and maintenance of the Granby Project, in combination with other dams and hydroelectric projects in the Oswego River Basin may cumulatively affect American eel migration and seasonal movements of resident fish such as lake sturgeon.

3.2.2 Temporal Scope

The temporal scope of our cumulative effects analysis in the EA includes a discussion of the past, present, and reasonably foreseeable future actions and their effects on water quality and fisheries. Based on the potential term of a new license, the temporal scope looks 30 to 50 years into the future, concentrating on the effect on water quality and fisheries from reasonably foreseeable future actions. The historical discussion, by necessity, is limited to the amount of available information for each resource. The quality and quantity of information, however, diminishes as we analyze resources further into the future from the present time.

In section 3.3.2, *Aquatic Resources,* we discuss the cumulative effects of licensing the project on water quality and fisheries.

3.3 PROPOSED ACTION AND ACTION ALTERNATIVES

In this section, we discuss the effects of the proposed action and project alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze the site-specific environmental effects and any cumulative effects.

Only the resources that would be affected, or about which comments have been received, are addressed in detail in this EA. Based on this, we have determined that geology and soils, aquatic, terrestrial, threatened and endangered species, recreation, and cultural resources may be affected by the proposed action and action alternatives. We have not identified any substantive issues related to land use or aesthetic resources associated with the proposed action, and therefore, these resources are not addressed in this EA. We present our recommendations in section 5.1, *Comprehensive Development and Recommended Alternative*.

3.3.1 Geology and Soil Resources

3.3.1.1 Affected Environment

The bedrock in Oswego County consists of nearly flat-lying Ordovician and Silurian sedimentary formations that were deposited in marine and terrestrial environments 400 to 500 million years ago. Bedrock dips to the southwest at approximately 50 feet per mile. Within the project area, the bedrock geology is composed of the Queenston Formation and Medina Group, which are commonly mapped together because they are difficult to differentiate. Both contain red shale, siltstone, and sandstone, and both were deposited under tidal flat and deltaic conditions. Overlying these formations and cropping out south of the Queenston-Medina sequence is the Clinton Group. The Clinton Group consists of green and gray marine sandstone, siltstone, shale, and hematitic limestone and is considered the youngest bedrock in the county. Water within these bedrock areas generally contains some iron, salt, and hydrogen sulfide.

The Lower Fulton Dam and the Granby Project structures are entirely founded on the Grimsby Sandstone, which consists of massive sandstone layers occasionally interbedded with thin-bedded clays and shales. The Grimsby Sandstone is dominantly red in color with grey spots and blotches and thin layers of light green and/or grey.

The area around Fulton is dominated by rolling lacustrine post-glacial topography including recessional moraines and fields of drumlins. The surficial geology in the vicinity of the Granby Project includes recent alluvium, lacustrine sand, glacial till, and kame deposits. Alluvial silt, sand, and gravel originate from stream deposits made during

postglacial time. These deposits are generally unconsolidated and permeable. Lacustrine sand originates from offshore deposits made during proglacial times or from postglacial lakes. Lacustrine sand deposits can vary in thickness and have low to moderate permeability. Kame deposits originate from coarse sand to cobble/gravel distributed on a glacier and later deposited on the ground as ice melted. Kame deposits exhibit some sorting but are mostly unconsolidated except for some secondary calcite cementation. These deposits are highly permeable.

The loamy soils of the Ontario Lowlands are derived from limestone and calcareous shale; they are generally deep and finely textured. Soils immediately adjacent to the west bank of the Oswego River in the project area are characteristic of the Middlebury series, a fine alluvium loam found on flood plains. Other soil units in the vicinity of the project include Amboy, Minoa, Raynham, Scriba, and Williamson soils, which are loams containing varying amounts of fine sand and/or silt.

During reconstruction of the Granby tailrace channel from 1980 to 1983, the streambanks were riprapped for slope protection. The Fulton impoundment, located outside the Granby Project boundary, is created by the Lower Fulton Dam, which includes concrete walls, a concrete navigation lock, concrete bridge abutments, and exposed bedrock.

3.3.1.2 Environmental Effects

Construction of Proposed Fish Passage Structures

During the Commission's scoping for this project, the effects of construction and operation of the proposed fish passage structures on soil stability and sediment transport were identified by Commission staff as potential issues of concern. Erie is proposing to install a seasonal upstream eel ladder in the Granby Project tailrace. However, Erie anticipates no ground-disturbing activity related to eel ladder construction. In addition, Erie is proposing to install a seasonal downstream fish passage structure, which would include the existing log sluice and construction of a new plunge pool to accommodate the range of log sluice flows. The area associated with the plunge pool is primarily dominated by boulders.

No stakeholder comments or concerns were received regarding the effects of the proposed fish passage structures on geology and soils.

Staff Analysis

Erie's proposal to install new fish passage facilities would require some construction that could temporarily disturb soil resources, which could result in limited sediment discharge into the Oswego River. Developing an erosion and sediment control

plan with procedures and best management practices (BMPs) to reduce erosion, contain sediment, and stabilize soils during and after completion of construction, would help to minimize turbidity and sedimentation associated with the minimal in-water disturbance.

3.3.2 Aquatic Resources

3.3.2.1 Affected Environment

Water Quantity and Use

The drainage area of the Granby Project is 5,020 square miles, comprising nearly 98 percent of the drainage area for the Oswego River watershed. While there is no active stream gage at the Granby Project, monthly and annual flow estimates were calculated using the ratio of the drainage area at the project to the drainage area of the U.S. Geological Survey (USGS) Gage No. 04249000, located at Lock No. 7 on the Oswego River (table 1). The highest flows typically occur from December through April. The lowest monthly flows at the project typically occur during August and September, when the median flows are less than 2,000 cfs.

Table 1. Historical monthly flow statistics[27] at the Granby Project for years 1934-2018 (Source: USGS Gage No. 04249000, as modified by staff).

	Flow (cfs)				
Month	**Minimum**	**90% Exceedance**	**Median**	**10% Exceedance**	**Maximum**
January	1,447	3,675	7,461	13,879	25,494
February	1,585	3,504	7,530	13,387	24,608
March	1,309	4,794	10,434	18,367	36,419
April	939	4,366	12,501	20,779	34,057
May	533	2,520	6,802	16,241	30,710
June	423	1,771	3,927	9,843	31,793
July	289	1,201	2,451	7,065	31,695
August	347	979	1,978	5,000	14,962
September	257	1,034	1,988	5,305	23,033
October	270	1,250	2,746	9,150	21,458
November	375	1,947	5,798	12,501	21,950
December	1,152	4,414	8,436	14,469	22,442
Annual	257	1,536	5,374	14,469	36,419

[27] A proration factor of 0.984 was applied to the gage data to account for the smaller drainage area of the Oswego River within the project area, compared to the gage location.

Along with hydroelectric power generation, water from the Oswego River is also used for canal locking operations and consumptive use. The Canal Corporation has the first right to the use of water to operate the Barge Canal System during the navigation season from May 1 to December 1. During this time, the Canal Corporation uses a daily average of 40 cfs for locking operations.

The State of New York requires municipal, industrial, and commercial facilities that withdraw a surface or groundwater volume equal to or greater than 100,000 gallons per day to obtain a water withdrawal permit from New York DEC. One surface water withdrawal location is within the vicinity of the project, adjacent to the Fulton impoundment. As of 2017, Huhtamaki Inc. withdraws an average of 0.52 million gallons of surface water per day for industrial use.[28] There are seven facilities on the mainstem of the Oswego River with active National Pollutant Discharge Elimination System permits.[29] The Fulton Municipal Water Treatment Facility discharges effluent into the Oswego River just downstream of the Granby Project boundary.

Water Quality

The Waterbody Inventory/Priority Waterbodies List is a statewide inventory of the waters of the State of New York with information on waterbody classifications, an overall assessment of water quality, causes and sources of water quality impact/impairment, and the status of restoration, protection, and other water quality activities and efforts. Fresh surface waters are assigned a letter classification that denotes their best uses. The most recent update to the Waterbody Inventory/Priority Waterbodies List for the Oswego River and Finger Lakes was completed in 2007 (New York DEC, 2007). The Granby Project is located within a segment of the lower Oswego River that is classified by New York DEC as Class B (non-trout) waters. The best uses of Class B waters are primary and secondary contact recreation, fishing, and fish propagation and survival. The dissolved oxygen concentration for Class B non-trout waters must not be less than a daily average of 5.0 milligrams per liter (mg/L) or below 4.0 mg/L at any time.

The lower Oswego River has been identified as an International Joint Commission Great Lakes Area of Concern (New York DEC, 2007). Aquatic life experience minor impacts due to nutrient enrichment from outflow of nutrients from Oneida Lake and other nonpoint sources throughout the watershed, resulting in periodic eutrophic conditions. However, management practices, enhanced stream flow, and water quality improvements

[28] Estimates last reported 2017, New York DEC Natural Resources and Environmental Protection Maps (https://www.dec.ny.gov/pubs/103459.html).

[29] U.S. Environmental Protection Agency (EPA) Enforcement and Compliance History Online (https://echo.epa.gov/).

have significantly reduced eutrophication and algae blooms in the river. As a result of these improvements, the lower Oswego River was removed from the Great Lakes list of Areas of Concern in 2006.

As described in section 2.1.4, *Existing Environmental Measures,* the current section 401 certification includes a requirement, modified in 1994, for dissolved oxygen monitoring and additional flow releases for dissolved oxygen mitigation under certain flow conditions (table 2). Under the requirement, during the period May 1 to October 31, Erie collects dissolved oxygen readings when project inflows are less than 1,500 cfs. Dissolved oxygen concentrations (mg/L) are measured at the Granby Project intake at 8 to 9 feet depth, which is equivalent to mid-depth in the water column. When prescribed dissolved oxygen levels are not achieved (table 2), the Granby Project is required to provide additional flow (944 cfs or inflow) at a point approximately 100 yards below the Route 3 bridge (the confluence of the Fulton tailrace and the bypassed reach).

Table 2. Current dissolved oxygen thresholds for inflow ranges at the Granby Project when flows are less than 1,500 cfs (Source: license application, as modified by staff).

Project Inflow	**DO Concentration Threshold**
1,250 cfs to 1,500 cfs	4.5 mg/L
1,000 cfs to 1,250 cfs	5.0 mg/L
Less than 1,000 cfs	5.5 mg/L

Erie files an annual report of dissolved oxygen readings and any mitigative releases with the Commission and New York DEC. Based on the annual reports from 2005 to 2018, the daily average river flow was below 1,500 cfs 24.7 percent of the time from May to October (635 out of 2,576 days). Flow conditions and the number of days where flow was below 1,500 cfs varied from year to year (figure 4). In 2016, which was characterized by warm, dry conditions, river flow was below 1,500 cfs for two-thirds of the days from May to October, whereas flow was below 1,500 cfs on only three days in 2013. Dissolved oxygen levels fell below the corresponding threshold criteria 81 times, or 12.8 percent of the days where a reading was required. During all days where the dissolved oxygen measurement was below the threshold criteria, Erie was not generating at the Granby powerhouse and was passing flow over the spillway and/or the Granby log sluice gate was open to assure adequate downstream aeration.

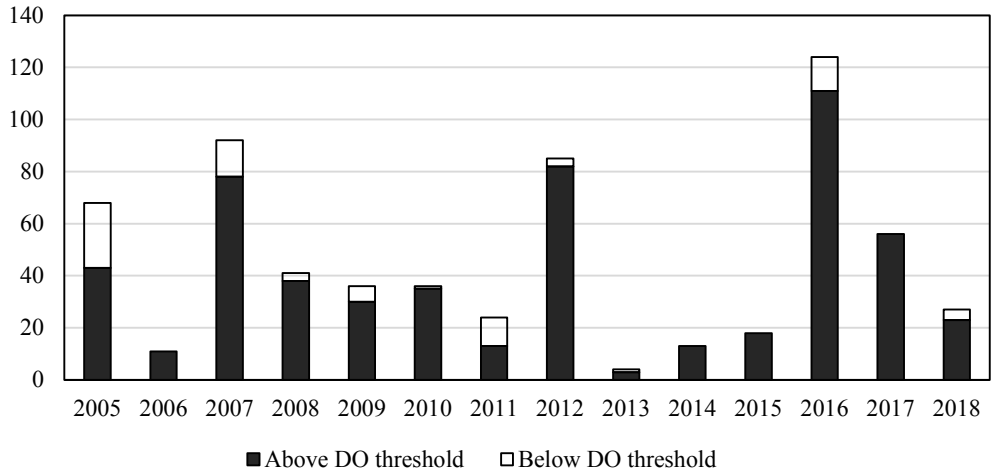

Figure 4. Number of days between May 1 and October 31 where daily average flow was less than 1,500 cfs and dissolved oxygen measurements were above (shaded bar) or below (open bar) prescribed dissolved oxygen thresholds (Source: Staff).

In support of the relicensing process, Erie conducted continuous water quality monitoring from June through September of 2016 at three locations around the Granby Project (figure 5). Site 1 (upstream) was located upstream of the Granby powerhouse in the project forebay. Site 2 (tailwater) was located in the Granby tailrace below the Oneida Street bridge. Site 3 (downstream) was located below the confluence of the tailrace and bypassed reach, upstream of the Fulton Municipal Water Treatment Facility. Water temperature and dissolved oxygen data were collected continuously at 15-minute intervals. Erie noted that the summer of 2016 was drier and warmer than the long-term average and that the Granby Project was off-line for almost the entire monitoring period (except from June 5 through June 9 and for a short period of time on September 19) due to low river flow.

Water temperature ranged from 64.9 degrees Fahrenheit (°F) to 82.6°F at site 1, 64.9°F to 81.1°F at site 2, and 64.8°F to 83.1°F at site 3, with minimum and maximum temperatures occurring in June and August, respectively. Dissolved oxygen values at all three sites periodically fell below the instantaneous New York State standard for Class B surface waters of 4.0 mg/L. The percent of time dissolved oxygen values were below the state standard was 1.5 percent at site 1, 2.7 percent at site 2, and 2.1 percent at site 3. There were low flows in the forebay and tailrace and abundant algal growth in the water column in these locations for most of the monitoring period in 2016.

Dissolved oxygen values measured at the aforementioned USGS gage No. 04249000, located downstream of the Granby Project, during the 2016 monitoring period were always above the New York State standard of 4.0 mg/L. Further, a review of the available dissolved oxygen data at the USGS gage (2011 to 2018) yielded 8 days where

the minimum daily dissolved oxygen value was less than 4.0 mg/L, the majority of which occurred during the summer of 2012.

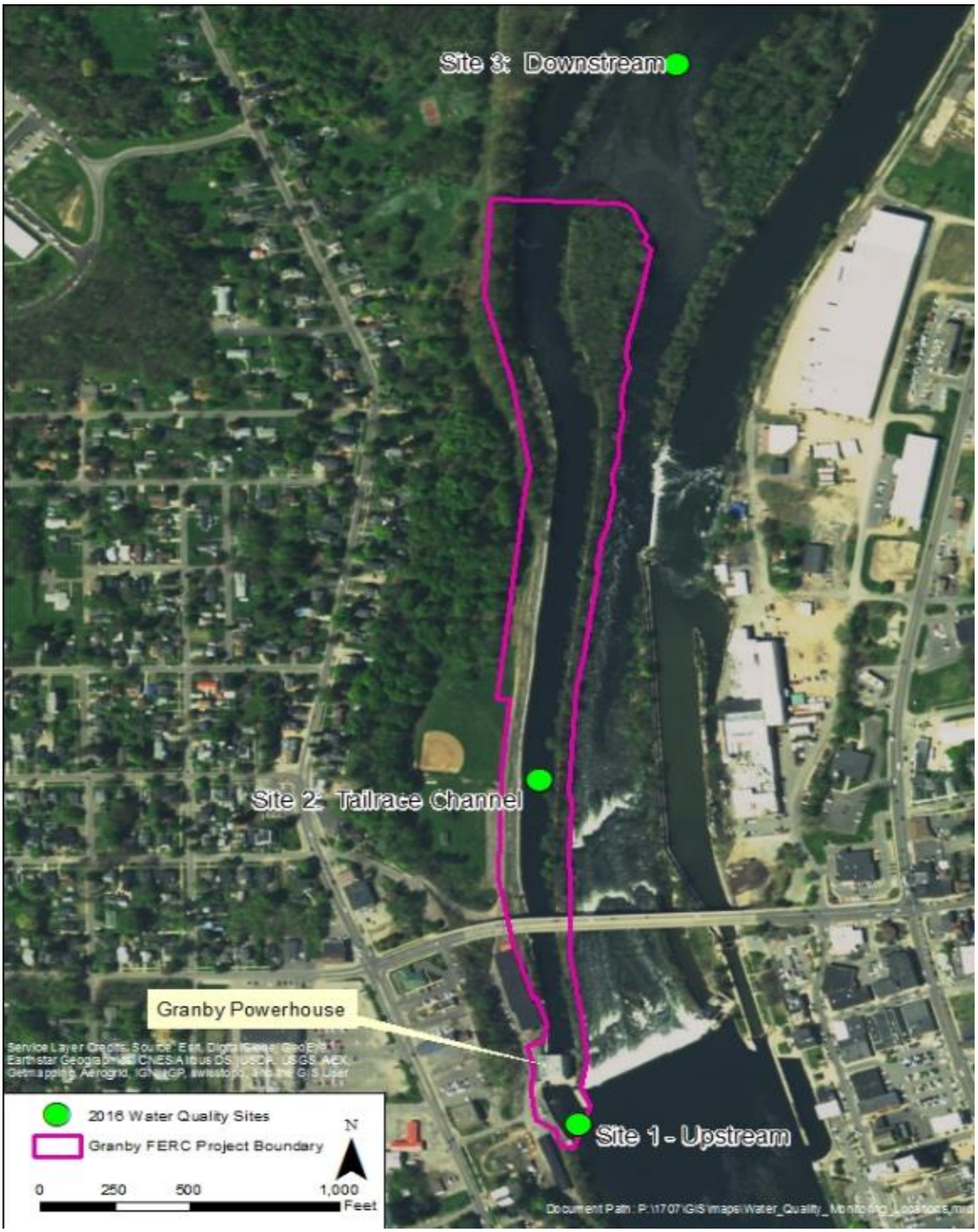

Figure 5. Continuous water quality monitoring stations at the Granby Project (Source: license application).

Aquatic Habitat

Aquatic habitat within the Granby Project boundary includes the 3,000-foot-long tailrace channel and the forebay in the vicinity of the powerhouse intake structure. Bathymetry and velocity data of the forebay and tailrace were collected by Erie in 2016. In addition, substrate mapping was performed in the tailrace in 2016 using side-imaging sonar coupled with point verification surveys.

At the normal pond elevation of 334.5 feet National Geodetic Vertical Datum of 1929 (NGVD 29), the water depth in the Granby forebay is shallow (less than 10 feet) near the boat barrier, deepening to 10-20 feet for most of the forebay and greater than 40 feet in a small area near the trashracks (figure 6). The forebay channel is primarily excavated bedrock and is surrounded by vertical concrete walls on each shore. Velocity data were collected in the forebay along three transects within the upper, middle, and lower forebay while the two units were generating with the log sluice gate open, representing full operational capacity conditions. Mean water column velocities ranged up to approximately 5.4 feet per second (ft/s), with a general pattern of low velocity along the west bank/wall, higher velocities toward the middle and toward the east forebay wall, and a prominent eddy exhibiting lower velocities along the east forebay wall.

The tailrace channel is approximately 100 feet wide and is excavated in bedrock to a depth of approximately 10-15 feet at normal water surface elevation, with a deeper excavated portion just downstream of the powerhouse (figure 6). The overall shape is relatively uniform along its length with steep sloped sides and a flat-bottomed channel. Velocities in the tailrace channel range up to 6.8 ft/s when two units are generating. Dominant substrates observed in the tailrace include bedrock, cobble/rubble, gravel, and areas of boulders. The banks consist primarily of cobble/rubble that had been placed and graded to the bottom of the channel. The channel in the upstream end of the tailrace is primarily composed of smooth bedrock, often overlain by cobble/rubble. The substrate of the middle section of the tailrace is composed of cobble/rubble, whereas the downstream end of the tailrace is characterized by a mix of boulders, cobble/rubble, woody debris, and gravel on the left part of the channel, and smaller substrate (i.e., gravel) on the right side of the channel. A habitat map, photos of different habitats, and cross-sectional velocity profiles within the tailrace are available in Appendix B of the license application.

The shared bypassed reach, adjacent to the Granby Project, is 3,200 feet long (FERC, 2001). The upper section is about 600 feet long, extending from the base of the Lower Fulton Dam to the confluence with the Fulton Development tailrace. The lower section extends approximately 2,600 feet from the downstream end of the upper section to the juncture of the Oswego River and the Granby tailrace. The shared bypassed reach provides riffle habitat that is uncommon elsewhere in the Oswego River, although the

upper section is frequently dewatered and is composed primarily of bedrock with some variable-sized boulders, minor amounts of gravel and sand, and little cover.

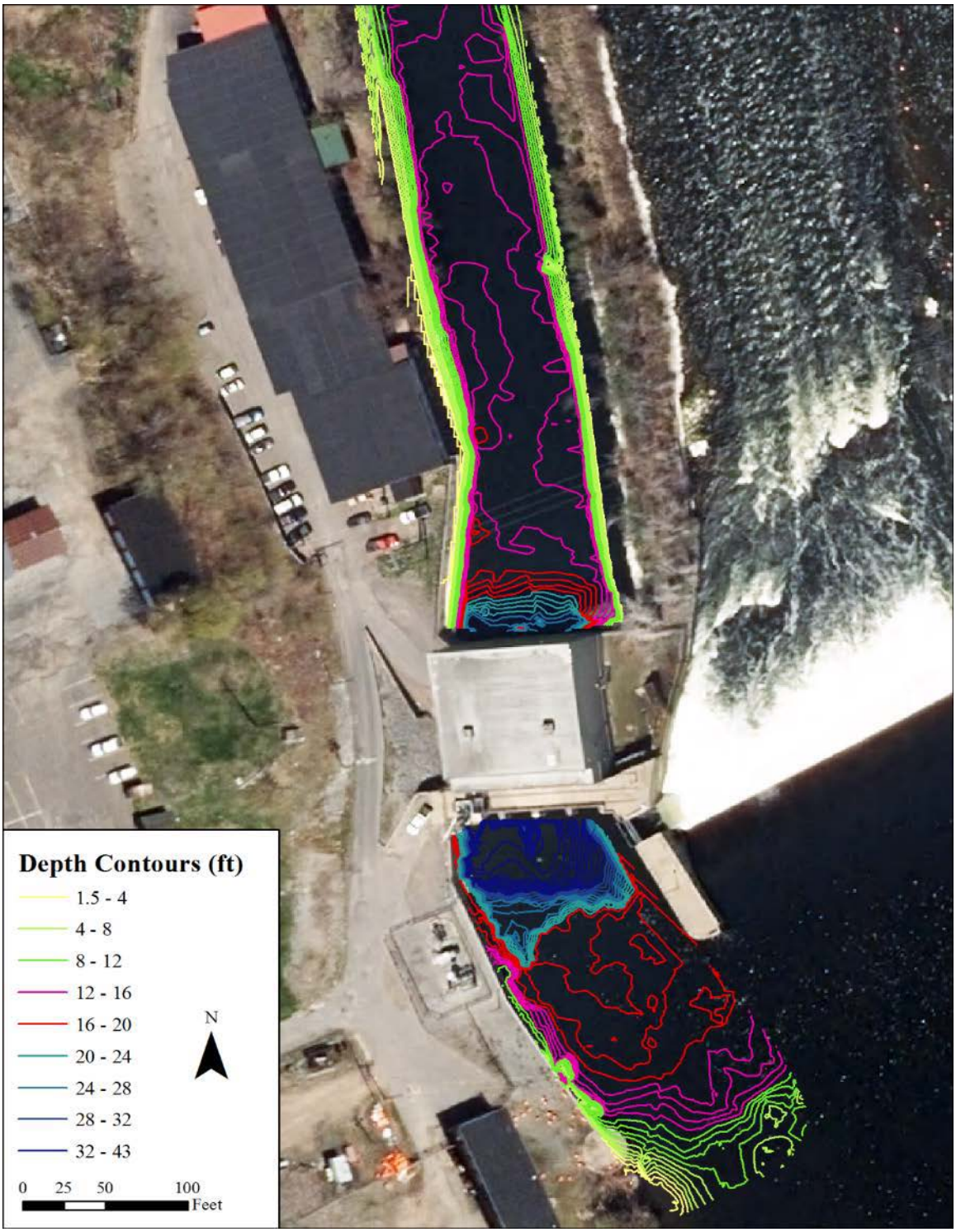

Figure 6. Depth contours in the Granby forebay and tailrace during normal impoundment (334.5 feet NGVD 29) and tailrace (311.0 feet NGVD 29) water surface elevations (Source: license application).

Fishery Resources

The fishery in the Oswego River is a mix of warm and coldwater species, including migratory and resident fish populations. Chinook and coho salmon, rainbow trout (steelhead), and brown trout migrate into the Oswego River from Lake Ontario in the fall and move upstream to the base of the Varick Dam (approximately 10 miles downstream of the Granby Project). Other gamefish in the river include walleye, northern pike, smallmouth, and largemouth bass.

The fish community in the Oswego River in the vicinity of the Granby Project has been characterized in historical surveys (table 3). In 1988, fish sampling of the Oswego River, including in the bypassed reach, was conducted in support of the Oswego River Project relicensing effort. Fifteen species and 329 individuals were collected in the bypassed reach. The most abundant fish species found included bluegill, freshwater drum, smallmouth bass, walleye, and yellow perch.

Additional sampling has been conducted by New York DEC, including a 1993 fisheries survey around Battle Island, downstream of the Granby Project, to gather channel catfish for the statewide toxic substance monitoring program. A total of nine species were recorded during the survey. In 2003 and 2010, New York DEC conducted additional surveys on the Oswego River at survey sites ranging from upstream of Lock 1 near the Phoenix Project (located approximately 9 miles upstream of the Granby Project) to downstream of Lock 5, near the Minetto Development (associated with the Oswego River Project, located 6.5 miles downstream of the Granby Project). A total of 20 species were documented. One lake sturgeon individual was documented during the 2003 and 2010 surveys above Lock 1 and immediately upstream of Lock 5, respectively.

Table 3. Fish species documented in the Oswego River from historical studies conducted by the Niagara Mohawk Power Corporation and New York DEC (Source: license application, as modified by staff).

Common Name	Scientific Name	Niagara Mohawk 1927-1989[a]	New York DEC	
			1993	2003-2010
Alewife	*Alosa pseudoharengus*	X		
American eel	*Anguilla rostrata*	X		
Atlantic salmon	*Salmo salar*	X		
Banded killifish	*Fundulus diaphanus*	X		X
Black bullhead	*Ameriurus melas*	X		
Black crappie	*Pomoxis nigromaculatus*	X		X
Blueback herring	*Alosa aestivalis*	X		
Bluegill	*Lepomis macrochirus*	XX		X
Bluntnose minnow	*Pimephales notatus*	X		X

Bowfin	*Amia calva*	X		X
Bridle shiner	*Notropis bifrenatus*	X		
Brook silverside	*Labidesthes sicculus*	X		X
Brook stickleback	*Culaea inconstans*	X		
Brown bullhead	*Ameiurus nebulosus*	X		X
Brown trout	*Salmo trutta*	X		
Burbot	*Lota lota*	X		
Chain pickerel	*Esox niger*	X		
Channel catfish	*Ictalurus punctatus*	XX	X	
Chinook salmon	*Oncorhynchus tshawytscha*	X		
Coho salmon	*Oncorhynchus kisutch*	X		
Common carp	*Cyprinus carpio*	XX	X	X
Common shiner	*Luxilus cornutus*	X		
Creek chubsucker	*Semotilus atromaculatus*	X		
Cutlips minnow	*Exoglossum macillingua*	X		
Eastern silvery minnow	*Hybognathus regius*	X		
Emerald shiner	*Notropis atherinoides*	X		X
Fathead minnow	*Pimephales promelas*	X		
Freshwater drum	*Aplodinotus grunniens*	XX	X	X
Gizzard shad	*Dorosoma cepedianum*	XX	X	
Golden shiner	*Notemigonus crysoleucas*	XX		
Goldfish	*Carassius auratus*	X		
Johnny darter	*Etheostoma nigrum*	X		
Lake sturgeon	*Acipenser fulvescens*	X		X
Largemouth bass	*Micropterus salmoides*	XX		X
Logperch	*Percina caprodes*	X		X
Longnose gar	*Lepisosteus osseus*	X		
Mimic shiner	*Notropis volucellus*	X		
Northern hog sucker	*Hypentelium nigricans*			X
Northern pike	*Esox lucius*	X		
Pumpkinseed	*Lepomis gibbosus*	XX	X	X
Rainbow smelt	*Osmerus mordax*	X		
Rainbow trout (steelhead)	*Oncorhynchus mykiss*	X		
River chub	*Nocomis micropogon*	X		
Rock bass	*Ambloplites rupestris*	XX		
Satinfin shiner	*Cyprinella analostana*	X		
Sea lamprey	*Petromyzon marinus*	X		
Silver redhorse	*Moxostoma anisurum*	X		
Smallmouth bass	*Micropterus dolomieu*	XX	X	X
Spotfin shiner	*Cyprinella spiloptera*	XX		X
Spottail shiner	*Notropis hudsonius*	XX		
Tadpole madtom	*Noturus gyrinus*	X		
Tesellated darter	*Etheostoma olmstedi*			X

Threespine stickleback	*Gasterosteus aculeatus*	X		
Trout-perch	*Percopsis omiscomaycus*	X		
Walleye	*Sander vitreus*	XX	X	X
White bass	*Morone chrysops*	X		
White catfish	*Ictalurus catus*	X		
White crappie	*Pomoxis annularis*	X		
White perch	*Morone americana*	X	X	
White sucker	*Catostomus commersonii*	XX	X	
Yellow perch	*Perca flavescens*	XX		X

[a] XX indicates species was captured in the bypassed reach during the Oswego River Project relicensing studies.

Lake Sturgeon

Lake sturgeon are native within the Lake Ontario drainage basin and are listed as threatened by New York State.[30] A large, late-maturing, and long-lived freshwater species, it was historically an abundant and widely distributed species in the Great Lakes drainage, but by the early 20th century overfishing, habitat fragmentation, and habitat degradation resulted in drastic population declines. Lake sturgeon generally live in lakes and larger rivers and migrate to tributaries in the spring to spawn when water temperatures reach 53-55°F (LaHaye et al., 1992). Spawning is intermittent; males typically spawn every other year and females less frequently (Billard and Lecointre, 2001).

As part of the New York State lake sturgeon recovery plan (New York DEC, 2018), seven management units have been designated based on the distribution of known sturgeon populations, movement within and among populations, and the genetic structure of lake sturgeon populations across the state. Restoration goals include establishing or maintaining sufficient self-sustaining populations of lake sturgeon. The Oswego River is part of the Central New York management unit, along with Oneida, Cayuga, and Onondaga Lakes and Oneida and Seneca Rivers. Hatchery-produced juveniles have been stocked into Oneida and Cayuga Lakes since 1995. Migration of these fish into the rivers has been documented and evidence of spawning has been observed at several locations throughout the river and lake complex.

Erie completed an assessment of the use of the Granby tailrace by spawning lake sturgeon in 2016 during the spring spawning season. Gill netting was performed under multiple flow conditions (no generation, 1-unit generation, and 2-unit generation). During the study sampling, 12 lake sturgeon were captured, 2 of which were recaptured in subsequent sampling events for a total of 14 lake sturgeon captures. Ripe males were

[30] Environmental Conservation Law of New York, Section 11-0535 and 6 NYCRR (New York Code of Rules and Regulations) Part 182. December 4, 1999.

documented as part of the survey and are believed to be using the tailrace area for spawning. No fish were captured during the non-generating scenarios, which indicates that lake sturgeon residing in the tailrace may exit the area during non-generation periods due to the lack of water velocity, or lake sturgeon in holding areas downstream were not attracted to the tailrace under non-generation conditions.

American Eel

American eel, a catadromous species, spends most of its life in fresh or brackish water before migrating to the Sargasso Sea to spawn. Once they hatch, ribbon-like larval eels are transported throughout the eastern seaboard via ocean currents. By the time the year-long journey to the coast is over, larvae have matured into the glass eel phase; they are completely transparent, have developed fins, and have taken on the overall shape of the adults. After swimming into continental waters, the glass eels mature into elvers, at which time they take on a greenish brown to gray pigmentation and grow beyond 10 centimeters (cm) in length. Elvers migrate upstream into estuarine and riverine environments, where they develop into yellow eels. Yellow eels have a yellowish green to olive coloration and will typically remain in this stage for 3 to 20 years before reaching the final stage of maturity. Yellow eels typically move upstream at night, with peak migration usually occurring during the summer months. As eels reach sexual maturity, they become darker on the dorsal side and silvery or white on the ventral side. This silver eel stage continues to grow as they complete their sexual maturation with males reaching 40 cm and females reaching 150 cm in length. In the northern extent of their range, eels mature later and at larger sizes and are more frequently female than in the southern portion of their range (Helfman et al., 1987). The American eel naturally inhabiting the Lake Ontario watersheds are exclusively large, old, and highly fecund females when mature. Silver eels migrate downstream and return to their spawning grounds where they die after spawning is complete. The spawning migration typically occurs in the late summer/fall in New England and eastern Canada but may occur sooner from inland locations. For instance, in the upper St. Lawrence River, the timing of the migration occurs from June to October (McGrath et al., 2003).

Historically, juvenile eels migrated into the St. Lawrence River/Lake Ontario watershed and upstream into tributaries, including the Oswego River, but populations have declined considerably in recent decades due to a combination of stressors, including overfishing, habitat loss from dam construction, and turbine mortality (Atlantic States Marine Fisheries Commission, 2000; MacGregor et al., 2015). The degree to which a dam is an impediment to eel passage depends on a number of factors, including the height of the dam, its surface, whether the surface is wetted or not, and the size of the eels trying to ascend it (FWS, 2015). For instance, elvers are more readily able to ascend wetted surfaces than larger yellow eels. Restoration efforts are being made in New York and throughout the species' historic range to restore passage for American eel. Upstream eel fishways were installed at two large hydroelectric projects on the St. Lawrence River,

Moses – Saunders and Beauharnois, in 1974 and 2006, respectively, increasing access to upstream habitat (McGrath et al., 2003). Experimental stocking of millions of American eel occurred in the Canadian waters of Lake Ontario from 2006 through 2010. Recent research indicated that the stocked American eels dispersed throughout Lake Ontario (Pratt and Threader, 2011).

Current eel population levels in the Oswego River are unknown. The remaining hydroelectric projects on the Oswego River downstream of the Phoenix Project, including the Fulton Development, have eel ladders to facilitate upstream movement.

3.3.2.2 Environmental Effects

Water Quality

Under the current license, seasonal dissolved oxygen monitoring is required by the section 401 certification during low-flow conditions at the Granby Project (see section 3.3.2.1, *Affected Environment, Water Quality*). The certification requires that during the period May 1 to October 31, Erie collect dissolved oxygen readings when project inflows are less than 1,500 cfs. When prescribed dissolved oxygen levels are not achieved (table 2), Erie is required to provide additional flow (944 cfs or inflow) at a point approximately 100 yards below the Route 3 bridge (the confluence of the Fulton tailrace and the bypassed reach).

Under section 2.13 of the Settlement Agreement, Erie, New York DEC, and FWS agree that the current requirement to monitor dissolved oxygen concentrations and provide flow releases for dissolved oxygen mitigation at the project should no longer be required as a condition in a new license. In support, the settlement parties state that there is no further corrective action that Erie can take because the project would already be offline at river flows less than 2,500 cfs and any excess flows would be provided over the spillway, through the log sluice, or through the Fulton Development.

Staff Analysis

Under the current license, Erie is required to monitor dissolved oxygen during low-flow conditions (under 1,500 cfs) and provide flow releases to mitigate for low dissolved oxygen conditions. However, the project typically does not operate when flows are less than 3,375 cfs. When inflows exceed the capacity of the Fulton Development powerhouse (1,115 cfs plus the required 75 cfs to the bypassed reach) but are less than 3,375 cfs, the remaining water is spilled over the Lower Fulton Dam. In addition, when low dissolved oxygen was observed at the Granby Project, downstream locations did not appear to be affected.

During the 2016 water quality monitoring study in which dissolved oxygen was continuously measured at the Granby Project forebay, tailrace, and the junction of the Granby tailrace and bypassed reach, dissolved oxygen measurements under the New York state standard of 4 mg/L were infrequent, occurring from 1.5 percent to 2.7 percent at each monitoring site. At no time during the 2016 monitoring period did dissolved oxygen levels at the downstream USGS gage No. 04249000 fall below the state standard. This was most likely because minimum flows from the Fulton Development help to re-aerate any low dissolved oxygen water moving through the Granby Project. The run-of-river operation and minimum flow requirements at the downstream hydroelectric projects would further help to oxygenate the reach of the Oswego River downstream of Granby. Because the project would spill flows during low-flow conditions, dissolved oxygen levels in the shared bypassed reach generally remain above state standards. Relicensing the Granby Project with its current operational procedures as described in the Settlement Agreement is not expected to have a significant effect on water quality at or downstream of the project.

Fish Passage and Protection

Upstream Passage of American Eel

The Lower Fulton Dam is likely a barrier to the upstream migration of American eel throughout most of the year. In lieu of field sampling for American eels, Erie proposes to install a seasonal (June 15 to September 15) ladder for upstream passage of eel (section 3.1.1.3 of the Settlement Agreement). As part of a siting study conducted in support of its license application, areas in the tailrace were surveyed for feasibility and suitability for placement of the eel ladder. The design of the ladder would be developed in consultation with FWS and New York DEC and would include a collection facility where eels would be captured and transported to the upstream end of the west forebay wall to avoid entrainment back through the turbines or fallback over the dam. While no effectiveness testing would be required, as outlined in section 5 of the Settlement Agreement, Erie proposes to prepare and provide an annual report to FWS and New York DEC describing the season's operation of the eel ladder, including daily counts of eels captured and released.

As evidenced by their execution of the Settlement Agreement, FWS and New York DEC support Erie's proposed installation of a seasonal upstream eel passage measure. Interior's preliminary section 18 fishway prescription would require the upstream eel passage measure proposed by Erie in the Settlement Agreement.

Staff Analysis

Currently, American eel encountering the Lower Fulton Dam may be able to ascend the 15-foot-high spillway, seasonally move upstream through locking operations

at the Barge Canal's Lock 3 (navigation season is typically May through November), or use the eel ladder at the Fulton Development. However, the conditions under which upstream eel passage occurs are unknown and may be dependent on spill or rain events. Seasonal eel ladders are now present at all of the other hydroelectric projects downstream of the Phoenix Project on the Oswego River. At the Oswego Falls Project, an eel ladder is located at the west end of the spillway. At the Fulton Development, the eel ladder is located adjacent to the Fulton powerhouse. Downstream at the High Dam Project, the City of Oswego maintains a short section of eel ladder that leads to a collection box, where eels are manually transported upstream of the Lock 6 dam. At the Varick Development, an eel ladder is located upstream and adjacent to the trashrack structure at the head of the forebay canal. Developing a means of seasonal upstream passage for American eel at the Granby Project would further improve access to the mainstem Oswego River and tributaries upstream of the project.

The annual report proposed by Erie would provide valuable information on the timing and number of eels using the ladder at the project and would be useful to inform seasonal eel passage measures both at the Granby Project and other hydroelectric projects on the Oswego River. Including length measurements of the collected and transported individuals would provide additional information on the relative ages of American eel using the ladder at the Granby Project. This could provide an increased understanding of eel passage, use, and movement in the Oswego River.

The measure proposed by Erie is consistent with management objectives for the American eel (Atlantic States Marine Fisheries Commission, 2000). Goals include maintaining and enhancing American eel abundance where they occur, as well as restoring eel to habitats where they had historical abundance by providing access to inland waters.

Downstream Fish Passage

Under the Settlement Agreement, trashrack replacement and the construction of downstream fish passage facilities are proposed. While we acknowledge these measures individually, we present them jointly as they collectively provide protection measures that benefit fisheries resources, including American eel, lake sturgeon, and other gamefish (largemouth bass, northern pike, smallmouth bass, and walleye) at the project development.

The existing downstream passage routes for fish encountering the Lower Fulton Dam, which include the Granby powerhouse and forebay, include through the Granby and Fulton powerhouses, where fish may suffer injury and mortality due to blade strikes, over the Lower Fulton Dam, seasonally through the Barge Canal's Lock 3, and through the seasonal downstream fish passage facilities at the Fulton Development. Erie proposes to install seasonal (May 1 to November 30) trashracks with either 1-inch clear spacing or

equivalent protection (e.g., seasonal overlays) within 5 years of the issuance and acceptance or the effective date of any new license, whichever is later (section 3.1.1.1 of the Settlement Agreement). Further, in section 3.1.1.2 of the Settlement Agreement, Erie proposes to provide seasonal downstream passage though the existing log sluice and to construct a plunge pool for fish moving downstream through the sluice, within 18 months of the issuance and acceptance or the effective date of any new license. Erie would work with FWS and New York DEC to design a fish-friendly[31] structure and ensure that it meets applicable FWS design criteria and standards. Final design and engineering specifications of the trashrack installation and downstream passage structure would be provided to the settlement parties 6 and 12 months prior to installation, respectively. A seasonal attraction flow (80 cfs) through the log sluice would be provided to facilitate fish passage when the project is operating. The flow will be provided to the extent practicable by maintaining impoundment elevation at the top of the flashboards. Since the impoundment elevation is governed by the Oswego River Project license, which allows 0.5 foot of fluctuation, there may be times when the attraction flow drops slightly below 80 cfs. During the downstream fish passage season, the attraction flow would be provided at least 30 minutes prior to unit start-up and maintained for at least 30 minutes after the unit(s) are shut down. In accordance with the Trashrack and Fishway Operations and Maintenance Plan, Erie would prepare an annual report following construction to document the success rates of maintaining the impoundment levels.

In the license application, Erie discussed operational challenges with reducing trashrack spacing to 1-inch, including build-up of debris from seasonal aquatic vegetation (e.g., water chestnut and milfoil). A provision is included in the Trashrack and Fishway Operations and Maintenance Plan (Appendix C of the Settlement Agreement) to perform routine raking to clear debris from the trashracks on an as-needed basis. Erie would consult with FWS and New York DEC regarding any problems with the seasonal installation, operation, and maintenance of the trashracks or to discuss potential alternatives to 1-inch clear spaced trashracks (Section 3.1.1.1.1 and 3.1.1.1.2 of the Settlement Agreement). The parties agreed that any alternative must be an existing technology, determined to be equally protective of fishery resources.

As evidenced by their execution of the Settlement Agreement, FWS and New York DEC support Erie's proposed downstream fish passage measures. Interior's preliminary section 18 fishway prescription would require the downstream fish passage measures proposed by Erie in the Settlement Agreement.

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[31] The Settlement Agreement defines fish-friendly as ensuring the safe downstream movement of fish through such measures as reducing the roughness of the passageway, reducing dispersion of the release across the passageway face, and having a plunge pool whose depth is equal to at least 25 percent of any vertical free-fall.

Staff Analysis

In support of its license application, Erie conducted a qualitative entrainment assessment to estimate entrainment rates for six target species of fish (American eel, lake sturgeon, largemouth bass, northern pike, smallmouth bass, and walleye) and a literature review of entrainment studies at similar hydroelectric projects in the region. Erie calculated a maximum intake velocity of 2.94 ft/s, which relative to burst and prolonged speeds[32] for the target species, is low enough to allow most adult gamefish to escape impingement and entrainment at the project. For example, Erie estimated prolonged and burst speeds for smallmouth bass as 2.1 to 3.2 ft/sec and 5.6 ft/sec, respectively.[33] In addition, due to the configuration of the project in relation to the adjacent Fulton Development, generation is typically more frequent in the winter and spring. Depending on flow conditions, the Granby Project can be idle for a portion of the summer (i.e., no generation occurred 67.2 percent, 75.8 percent, and 78.4 percent of the time in July, August, and September respectively from 2011 to 2016). Because of this, Erie estimated low entrainment rates for most target species. However, of the target species, the 4.875-inch clear spacing of the existing trashracks would exclude only large lake sturgeon (greater than 52 inches in length). American eel adults in particular select passage routes with the greatest flow and often pass via turbine routes and would be more susceptible to entrainment during the outmigration period under certain flows and operating conditions. Erie estimated that 1-inch clear spaced trashracks would exclude 27-inch American eel, 11-inch lake sturgeon, 7.5-inch largemouth bass, 13-inch northern pike, 8-inch smallmouth bass, and 8-inch walleye.

Providing a safe pathway for downstream fish passage would protect most silver phase American eel and other adult resident species from entering the powerhouse. The FWS's Design Criteria Manual includes standards for trashrack angle, velocities at the trashrack and fish conveyance structure, conveyance dimensions, and plunge pool depth that should ensure safe downstream passage of American eel and other resident species. Providing protection from turbines as well as an alternative passage route is consistent with eel management and restoration plans (Atlantic States Marine Fisheries Commission, 2000).

The proposed downstream fish passage facilities would directly benefit fisheries resources by providing a safe and efficient alternative to downstream passage through the project turbines or spillage over the dam. Indirectly, the design specifications, including

[32] Burst speeds are the maximum speeds that can be obtained by fish, are anaerobically fueled and brief (less than 15 seconds). Prolonged swimming speeds are sustained by a combination of aerobic and anaerobic processes and can be maintained for moderate periods of time (up to 200 minutes).

[33] See license application, Appendix B - Fish Passage and Protection Study

the year-round minimum 80-cfs conveyance flows, would create appropriate hydraulic signals (e.g., velocity, acceleration, turbulence, and sound) to help guide fish away from the adjacent turbine intakes, thereby enhancing the level of protection that would be offered by the proposed seasonal trashracks.

Short-term Construction Effects

Erie is proposing to install a seasonal upstream eel ladder in the Granby Project tailrace, construct a new plunge pool to accommodate a range of existing log sluice flows, and install seasonal trashracks with 1-inch clear spacing or equivalent protection (e.g., seasonal overlays). Construction of the proposed facilities may require the installation of cofferdams, excavation, and disturbance of the riverbed substrate. Therefore, these activities have the potential to cause erosion and sedimentation, which could cause a temporary increase in water turbidity, and temporarily displace fish from areas where structures are being installed.

We did not receive any stakeholder comments or concerns regarding the effects of the proposed fish passage structures on aquatic resources.

Our Analysis

The proposed construction could increase erosion and mobilization of sediment, thereby affecting water quality and aquatic habitat in the forebay, tailrace channel, and the bypassed reach downstream of the dam and log sluice. Erie notes that the area associated with the plunge pool is primarily dominated by boulders and that the log sluice is currently used to pass flow and debris. Implementing specific measures to control erosion and sedimentation during construction would help ensure that water quality and aquatic habitat are protected. While the magnitude of the construction effects would likely be minimal and of short duration (e.g., weeks or months), the development of an erosion and sediment control plan, as described above in section 3.3.1, *Geology and Soils*, would minimize these effects. Although any effects would likely be limited to the forebay, tailrace, and the bypassed reach just downstream of the dam and log sluice, eels and fish would likely avoid the immediate area while the seasonal trashracks, downstream fish passage structure, and eel ramp are being installed. Fish would likely re-colonize the area following the completion of construction.

3.3.2.3 Cumulative Effects on Aquatic Resources

Water Quality

There are eight hydroelectric projects on the Oswego River (figure 3) which may cumulatively affect water quality, mainly dissolved oxygen, in the Oswego River. Approximately 9 miles upstream, the Phoenix Project is located at Lock 1. The Oswego

Falls (East and West) Project is located at the Upper Fulton Dam and Lock 2, approximately 0.5 mile upstream from the Granby Project. The Fulton Development, part of the Oswego River Project, is located at the opposite end of the Lower Fulton Dam and shares a single bypassed reach and impoundment with the Granby Project. Downstream from the Granby Project are the Minetto Development (part of the Oswego River Project) at Lock 5, the High Dam Project at Lock 6, and the Varick Development (part of the Oswego River Project) at Lock 7. Historically, several of the facilities were operated in a peaking mode, but presently each operates in run-of-river mode. For instance, the Oswego River Project has operated in a run-of-river mode, with minimum impoundment fluctuations, since its relicensing in 2004. Although analysis provided in the Oswego River Final Environmental Assessment indicates that stratification is rare in the Oswego River (FERC, 2001), the continued operation of the Granby Project in tandem with the Fulton Development and other projects on the Oswego River as run-of-river help to further minimize stratification in the impoundments and stabilize the river flow. The operation of these run-of-river developments has helped to increase the amount of suitable habitat for spawning and rearing within the Oswego River (New York DEC, 2007).

As described in section 3.3.3.1, *Affected Environment, Water Quality*, dissolved oxygen readings at the Granby Project generally conform to state standards. Dissolved oxygen can fall below 4.0 mg/L in the forebay and tailrace during low-flow conditions, but there is no indication that effects from the Granby Project persist downstream. In section 2.13 of the Settlement Agreement, Erie, New York DEC, and FWS agreed that the dissolved oxygen monitoring should not be included as part of any new license for the Granby Project as the project is already offline at river flows less than 2,500 cfs and excess flows are provided over the spillway, through the log sluice, or through the Oswego River Project's Fulton Development. Therefore, there is no indication that continuing to operate the Granby Project as proposed by Erie (with no operational changes) would significantly add to the cumulative effects on water quality that have occurred or may occur in the future due to any new activities in the Oswego River.

Fishery Resources

Downstream migrating American eels can suffer high turbine mortality when moving through hydroelectric plants and in rivers where eels must successfully pass through several hydroelectric facilities, cumulative mortality rates can be high (FWS, 2015). Further, dams can cause delays in both upstream and downstream migration, further impacting population dynamics and potentially preventing silver eels reaching the spawning grounds during the spawning season (FWS, 2015). As described above in section 3.3.2.1, *Fishery Resources, Affected Environment*, efforts to restore American eel and lake sturgeon in the Oswego River are ongoing. Providing a means of seasonal upstream passage at the Granby Project would allow eels that arrive at the project to access additional habitat upstream of the Lower Fulton Dam. Although the current

population of American eel in the Oswego River is unknown, implementation of eel passage at other projects on the St. Lawrence and Oswego Rivers has the potential to increase the population of eels in the Oswego River watershed. In addition, any upstream eel passage measures at the Granby Project would likely increase the number of eels upstream of the project.

Developing a downstream fishway that meets FWS's design criteria and seasonal use of trashracks with reduced spacing would likely prevent entrainment of American eel, lake sturgeon, and other resident gamefish through the powerhouse and avoid injury and mortality associated with passage through the turbines. As such, the relicensing of the Granby Project with the proposed measures described above, together with ongoing fish passage measures at the Oswego River, Oswego Falls, and High Dam projects, would result in an overall positive cumulative effect on American eel migration and habitat access in the Oswego River Basin.

3.3.3 Terrestrial Resources

3.3.3.1 Affected Environment

The Granby Project is located within the Ontario Lowlands ecoregion, which is a sub-set of the Eastern Great Lakes Lowlands ecoregion. It is characterized by relatively low, flat areas lying south of Lake Ontario with fine-textured, deep, and productive limestone-derived soils (EPA, 2009).

Upland habitat within the project boundary is limited to narrow strips along the Oswego River's western shoreline and the tailrace associated with the project. The habitat is bounded by open water and residential developed land outside the project boundary. Major vegetation types present include forested and managed vegetation areas. Typical tree species present in both the forested and managed vegetation areas are box elder, silver maple, American elm, and green ash.

Wetlands

Erie identified the Oswego River as the only wetlands present within the project boundary according to the National Wetlands Inventory. It is classified as lacustrine, limnetic, unconsolidated bottom, permanently flooded, and impounded. This wetland type is generally characterized as a deepwater habitat with at least 25 percent cover of particles smaller than stones (less than 6 to7 cm), and vegetative cover less than 30 percent. No New York DEC state-regulated wetlands are found in the project boundary.

Invasive Species

As noted in the license application, several invasive plant species have been identified within the region and four were documented within the Granby Project boundary. Terrestrial invasive species identified by the St. Lawrence and Eastern Lake Ontario Partnership for Regional Invasive Species Management (SLELO PRISM) as management priorities include black swallow-wort, pale swallow wort, giant hogweed, purple loosestrife, glossy buckthorn, and Japanese knotweed. Aquatic invasive species identified by the SLELO PRISM include water chestnut, Eurasian water milfoil, and European frog-bit. The SLELO PRISM also maintains a watch list of three terrestrial and aquatic species including mile-a-minute vine, hydrilla, and kudzu.

A total of two terrestrial and two aquatic plant species identified by the SLELO PRISM were documented by Erie during its 2016 Botanical and Wildlife Assessment within the project boundary. The documented species include purple loosestrife, Japanese knotweed, Eurasian milfoil, and water chestnut.

Wildlife

Wildlife species expected to use habitat available at the project include species tolerant of human development and activity (i.e., raccoon, Virginia opossum, various small mammals, and numerous bird species), game species such as white-tailed deer, and species that would use the Oswego River and surrounding riparian habitat (i.e., various herpetofauna, osprey, waterfowl species, muskrat, and beaver).

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is protected under the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act, which prohibit the take of eagle eggs, nests, and offspring, and can also include substantially disturbing normal breeding and feeding activities, except as permitted by regulation. Bald eagles are listed as a threatened species in New York State and are protected under New York State law. Bald eagles typically forage over water and other open habitats. Bald eagles nest in mature trees and snags and on cliffs, rocks, and artificial structures, generally within 1 mile of water. Nesting activity occurs from January through August.

The species is known to occur in Oswego County, and Erie noted that it may occur in the vicinity of the Granby Project. Additional data confirm the occurrence of immature and mature bald eagles within the project vicinity (within 1 mile) during the

breeding season.[34] Since bald eagle breeding activity within New York State has been expanding since the 1980s, and suitable bald eagle breeding habitat exists within the project boundary, it is possible for bald eagles to nest within the project area during the term of any license that may be issued for the project.

3.3.3.2 Environmental Effects

In SD1, Commission staff identified the effects of continued project operation and maintenance on migratory birds such as the bald eagle, and on the introduction or spread of invasive plants as resource issues. SD1 also identified the proposed fish passage structure's construction effects on terrestrial resources as a resource issue.

The Commission received no substantive comments regarding the effects of project operation or maintenance on terrestrial resources. Construction and operation of proposed fish passage structures is limited to (1) a seasonally installed eel ladder, collection tank, and release activities to support upstream fish passage; and (2) a seasonally installed and maintained 1-inch clear spaced trashrack overlay, seasonal operation and maintenance of the existing log sluice to create attraction flow, and construction of a plunge pool to support downstream fish passage. The construction of the plunge pool is expected to be of limited size and scope and resource protection measures contained within Erie's proposed plans for invasive plant species management and bat and bald eagle protection are likely to protect terrestrial resources. Additionally, a staff-recommended erosion and sediment control plan (section 5) that includes BMPs for minimizing clearing and protecting vegetation during construction may also help protect terrestrial resources. The construction and operation of the proposed fish passage structures are not expected to affect terrestrial resources. Therefore, staff analyzed the effects associated with Erie's proposals for the Invasive Plant Species Management Plan and the Bat and Bald Eagle Protection Plan.

Invasive Plant Species Management Plan

Erie's Invasive Plant Species Management Plan, filed with the Settlement Agreement, includes measures to prevent the introduction and spread of terrestrial and aquatic invasive plant species. Example measures in the plan include employing BMPs during construction or maintenance, such as cleaning and drying boats that come into contact with water; training workers to identify and remove invasive species from construction equipment before entering an invasive-free area; and using invasive-free

[34] According to the Cornell Lab of Ornithology's eBird database (http://ebird.org), numerous observations of immature and mature bald eagles were documented. Consistent observations, including some photo documentation, were made over the last 10 years.

gravel, fill, erosion control material (i.e., straw or fiber rolls), and seed stock during replanting.

In a letter filed April 12, 2019, FWS recommends that Erie implement the Invasive Plant Species Management Plan filed with the Settlement Agreement.

Our Analysis

Several species of terrestrial and aquatic invasive plant species are present at the Granby Project. Operation and maintenance of the project could result in the introduction or spread of terrestrial and aquatic invasive species within the project boundary, and during construction and installation of proposed fish passage structures. However, employing measures to minimize the introduction and spread of invasive species during construction, operation, and maintenance, such as those included within the proposed Invasive Plant Species Management Plan, would minimize the introduction or spread of invasive species within the project boundary.

Bat and Bald Eagle Protection Plan

Erie proposes to implement the Bat and Bald Eagle Protection Plan,[35] filed with the Settlement Agreement, to minimize project effects on bald eagles by: (1) notifying New York DEC and FWS within 72 hours of the date of observation of a bald eagle nest within or immediately adjacent to the project boundary; and (2) limiting tree clearing activity on project lands during certain periods (i.e., no tree clearing within 330 feet of a bald eagle nest, and no construction within 660 feet of a bald eagle nest during the breeding season [between December and June]).

Interior recommended pursuant to section 10(j) that Erie implement the Bat and Bald Eagle Protection Plan filed with the Settlement Agreement.

Our Analysis

Project maintenance could result in limited ground disturbance within the project boundary, including the potential removal of trees. However, consulting with FWS and New York DEC when bald eagles nest within or immediately adjacent to the project boundary and incorporating measures to minimize habitat disturbance surrounding active nests on project lands, such as those included in the proposed Bat and Bald Eagle Protection Plan, would minimize effects to bald eagles.

[35] Measures within this plan regarding the federally listed endangered Indiana and threatened northern long-eared bats are evaluated in section 3.3.3, *Threatened and Endangered Species*.

3.3.4 Threatened and Endangered Species

3.3.4.1 Affected Environment

FWS's IPaC system indicates one federally listed endangered species, the Indiana bat, and two federally listed threatened species, the northern long-eared bat and the bog turtle, may occur within the boundary and/or may be affected by the Granby Project. No critical habitat for any federally listed threatened or endangered species occurs within project-affected lands.[36]

Indiana Bat

The Indiana bat is a federally listed endangered species that is known to occur in the area of the Granby Project. FWS listed the Indiana bat as endangered on March 11, 1967. Critical habitat for the Indiana bat was designated on September 24, 1976 and consisted of 11 caves and 2 mines in 6 states. The original recovery plan for the species was published in 1983 and a revised version was released in 2007 (FWS, 2019a).

In winter, the species hibernates colonially in limestone and sandstone caves, cliff lines, and abandoned mine shafts from October through April. The non-hibernation season (April 1 through November 15) includes spring emergence and migration, summer reproduction in maternity roosts, and fall migration, swarming, and mating. Loss, degradation, and fragmentation of roosting habitat in hibernacula or maternity colonies are major factors in their decline. In summer, most reproductive Indiana bat females occupy roost sites under the exfoliating bark of dead trees that retain large, thick slabs of peeling bark. Primary roosts usually receive direct sunlight for more than half the day. Roost trees are typically within canopy gaps in a forest, in a fence line, or along a wooded edge. Habitats in which maternity roosts occur include riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats typically forage for flying insects along river and lake shorelines, in the crowns of trees in floodplains, and in upland forests (FWS, 2019a).

The Granby Project is located within the range of the Indiana bat, and the bat could potentially occur within the project boundary. In the Settlement Agreement, New York DEC identified a known occurrence of an Indiana bat maternity roost within 2.5

[36] *See* Commission staff's September 5, 2019 memorandum.

miles of the Granby Project, and thus defined the project area as occupied habitat for the species.[37]

Northern Long-eared Bat

FWS listed the northern long-eared bat as threatened on May 4, 2015 (FWS, 2015), and determined on April 27, 2016 that designating critical habitat is not prudent (FWS, 2016b).

The northern long-eared bat is a medium-sized bat species (3 to 3.7 inches in length) with longer ears than other species in the Myotis genus (FWS, 2015). The species' range includes 37 states, including most of the central and eastern United States, as well as the southern and central provinces of Canada, coinciding with the greatest abundance of forested areas.

The northern long-eared bat is found in a variety of forested habitats in the summer season. During this time, bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. In the fall season, northern long-eared bats leave their forested habitat to hibernate in caves, mines, and other similar habitat. The bats arrive at hibernacula between August and September, enter hibernation between October and November, and emerge from hibernacula between March and April. Hibernacula and surrounding forest habitats play important roles in the bat's life cycle beyond the time when bats are overwintering, including for fall-swarming[38] and spring-staging[39] activities. Reproduction is limited to one pup per year in late spring. As such,

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[37] Occupied habitat means a geographic area in New York State within which a species listed as endangered or threatened has been determined by New York DEC to exhibit one or more essential behaviors. Once identified as occupied habitat, New York DEC will continue to consider that area as occupied habitat until the area is no longer suitable habitat for that species or monitoring has indicated that reoccupation by that species is unlikely.

[38] Fall-swarming fills the time between summer and winter hibernation. The purpose of swarming behavior may include: introduction of juveniles to potential hibernacula, copulation, and gathering at stop-over sites on migratory pathways between summer and winter regions.

[39] Spring-staging is the time period between winter hibernation and migration to summer habitat. During this time, bats begin to gradually emerge from hibernation and exit the hibernacula to feed but re-enter the same or alternative hibernacula to resume daily bouts of torpor (i.e., a state of mental or physical inactivity).

bat populations can be slow to rebound from anthropogenic and naturally-occurring mortality events.

On January 14, 2016, FWS issued a final 4(d) rule that prohibits the following activities in areas of the country impacted by white-nose syndrome:[40] incidental take within a hibernation site; tree removal within 0.25 mile of a known, occupied hibernaculum; and cutting or destroying known occupied maternity roost trees, or any other trees within 150 feet of that maternity roost tree, during the pup-rearing season (June 1 through July 31) (FWS, 2016a). On January 5, 2016, FWS developed an optional streamlined consultation framework that allows federal agencies to rely on a programmatic biological opinion on FWS's final 4(d) rule to fulfill section 7(a)(2) consultation requirements for northern long-eared bat (FWS, 2016c).[41]

The Granby Project is located in Oswego County, which is within the white-nose syndrome zone and the northern long-eared bat species range (FWS, 2019b). There are no known summer or winter occurrences of northern long-eared bats within the project boundary, and no occurrence surveys were conducted in the project area. However, there are confirmed summer occurrences of northern long-eared bats in adjacent Jefferson, Lewis, and Onondaga counties, and winter occurrences in Jefferson and Onondaga counties (FWS, 2019c; New York DEC, 2018).

Bog Turtle

The bog turtle was listed as a federally threatened species on November 4, 1997, by FWS, and has no federally designated critical habitat. The bog turtle recovery plan was published on May 15, 2001 (FWS, 2019d).

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[40] White-nose syndrome is the main threat to the northern long-eared bat, and has caused a precipitous decline in bat numbers (in many cases, 90 to 100 percent) where the disease occurs.

[41] FWS developed a key to help federal agencies determine if they can rely on the streamlined section 7 consultation in the 4(d) rule, or if their actions may cause prohibited incidental take that requires separate section 7 consultation. FWS's key considers whether the federal action: (1) may affect the northern long-eared bat; (2) involves the purposeful take of northern long-eared bats; (3) is located inside the white-nose syndrome zone; (4) will occur within a hibernaculum or alter the entrance/environment of a hibernaculum; (5) involves tree removal; (6) involves the removal of hazardous trees; and (7) includes (a) the removal of an occupied maternity roost tree or any trees within 150 feet of a known occupied roost tree from June 1 through July 31, or (b) the removal of any trees within 0.25 mile of a hibernaculum at any time of year (FWS, 2016d).

Bog turtles inhabit distinct types of headwater wetland habitats that include spring-fed hydrology and loose, saturated soils. Small spring-courses, rivulets, and shallow pockets of surface water typify the surface hydrology of bog turtle wetlands. Subterranean tunnels that access flowing groundwater are often used by bog turtles as hibernacula and as refugia during the hot summer months. Deep, loose, saturated soils in which bog turtles can burrow are an important component of their habitat. Ideal bog turtle wetlands contain mostly emergent vegetation with open canopy (minimal woody species), though some shrubs and small trees may be scattered throughout. Bog turtles typically hibernate from mid-September through mid-April.

The species is native to the eastern United States with a range in the northeast from New York and western Massachusetts south to Maryland. In New York, extant populations of bog turtle are known from 22 counties, including Oswego County (FWS, 2019d). Although the Granby Project is located within the range of the bog turtle, FWS did not provide any recommendations for the species, and no suitable habitat occurs within the project area.

3.3.4.2 Environmental Effects

Although New York DEC and FWS records indicate there are no Indiana or northern long-eared bat hibernacula or maternity roosts known to occur within the project boundary, project lands may provide suitable summer roosting and feeding habitat for the two species, and New York DEC records indicate a known occurrence of Indiana bat maternity roost within 2.5 miles of the Granby Project. Routine maintenance in the project boundary would likely involve the removal of trees, which may remove potential summer roosting habitat used by Indiana or northern long-eared bats.

The proposed Bat and Bald Eagle Protection Plan filed with the Settlement Agreement includes a requirement for Erie to notify New York DEC and FWS within 72 hours of discovering a roost tree or hibernacula at or immediately adjacent to the project. It also includes tree clearing guidelines that were developed for both the Indiana and northern long-eared bat species. The tree clearing guidelines require that Erie follow a seasonal restriction for removal of suitable roost trees from April 1 to September 30.[42] Although, removal of suitable roost trees within the seasonal restricted time period is possible with prior consultation with FWS and New York DEC. Unsuitable roost trees may be removed without restriction as long as the activity does not damage any suitable roost trees; and hazard trees[43] may be removed without restriction, but Erie must notify FWS and New York DEC if bats are observed.

[42] Suitable roost trees are any tree greater than or equal to 3 inches diameter at breast height.

[43] Hazard trees are those that pose a reasonable threat to human life or property.

In a letter filed April 4, 2019, Interior states that based on the protection measures outlined in the Bat and Bald Eagle Protection Plan, any take that may occur incidental to this project is not prohibited under the final 4(d) rule for the northern long-eared bat and that the plan's protection measures will also protect the Indiana bats. The letter also states that no further ESA coordination or consultation for either species is required at this time.

Our Analysis

Seasonal avoidance of suitable roost tree removal from April 1 to September 30, consultation with FWS and New York DEC regarding suitable roost tree removal within this time period, and reporting observations of bats during any removal of hazard trees, is likely to minimize effects to Indiana and northern long-eared bat species. We also conclude that, while continued operation and maintenance of the project may affect the northern long-eared bat, any incidental take that may result from these activities is not prohibited by the final 4(d) rule. We further conclude that because no suitable habitat occurs within the project area, the project's continued operation and maintenance will not affect the bog turtle.

3.3.5 Recreation Resources

3.3.5.1 Affected Environment

Local and Regional Recreation Opportunities

Fishing is the primary recreational activity along the Oswego River. Erie describes thousands of fishermen gathering from the Oswego Harbor to Varick Dam, about 10 miles downstream of the project, to enjoy fishing during the seasonal salmon runs. Additionally, recreational boaters can move upstream and downstream through the Canal Corporation's seven locks on the Oswego Canal. Passage through the lock system is available 7 days a week, typically from 7 a.m. to 10 p.m. from late May to early October (peak navigation season). Reduced hours of operation are provided during the remainder of the navigation season, which runs from early May through November.

A state park and three city-owned parks provide access to the Oswego River as well as other recreational opportunities in the vicinity of the project. Battle Island State Park is a riverfront park located on the same side of the river, about 2 miles downstream, of the project. New York State Parks, Recreation, and Historic Preservation operates and maintains Battle Island State Park, which includes a golf course and offers cross-country skiing in the winter. Canal Park Marina, owned and operated by the City of Fulton, is located at Lock 3 on the opposite side of the river from the project. It is a full-service marina offering water and electric hook-ups, private showers, and restrooms. Lock 3

offers upstream and downstream passage for recreational boats during the navigation season. Foster Park, operated and maintained by the City of Fulton, is immediately adjacent to the Granby Project; the park includes an athletic field complex, picnic pavilion, and playground. Indian Point Landing, located approximately 1,000 feet downstream of the Fulton Development, is owned and operated by the City of Fulton. The park offers a boat launch, fishing access, and picnicking facilities.

Project Recreation

There are no formal recreation facilities at the Granby Project. Angling access to the tailrace is available only by boats, which can be launched just downstream at Indian Point Landing. Shoreline access to the tailrace is restricted and is fenced off along the downstream west bank for safety reasons. Impoundment access for fishing is provided along the east bank seawall that connects Lock 3 with the upstream Lock 2 of the Oswego Falls Project.

3.3.5.2 Environmental Effects

Erie is not proposing any recreation-related protection, mitigation, or enhancement measures. The hazardous conditions and swift currents below the powerhouse decrease the potential for providing recreation at the project. In order to minimize public safety issues, Erie has installed a fence barrier along the shoreline of the tailrace to prevent public access to this area.

No recommendations for improved access or recreational amenities were received from local, state, or federal entities.

Staff Analysis

Multiple recreation opportunities exist in and around the Oswego River and its locks. Passage through the locks allows for upstream and downstream recreational boating and provides access to Lake Ontario. Nearby parks and marinas offer fishing access, boat ramps, picnic facilities, and a variety of land-based recreation activities.

There has not been a demonstrated need for recreation facilities at the project. In addition, potentially hazardous conditions below the powerhouse create a public safety concern.

3.3.6 Cultural Resources

3.3.6.1 Affected Environment

Section 106 of the NHPA requires the Commission to evaluate potential effects on properties listed or eligible for listing on the National Register prior to an undertaking. In this case, the undertaking is the issuance of a new license for the Granby Project. Project-related effects could be associated with the operation and maintenance of the existing project and construction of the fish passage, eel passage, and plunge pool structures.

Historic properties are defined as any prehistoric or historic district, site, building, structure, or object that is included on or eligible for inclusion on the National Register. Traditional cultural properties are a type of historic property eligible for the National Register because of their association with cultural practices or beliefs of a living community that are: (1) rooted in that community's history or (2) important in maintaining the continuing cultural identity of the community. In this EA, we also use the term cultural resources to include properties that have not been evaluated for eligibility for listing in the National Register. In most cases, cultural resources less than 50 years old are not considered eligible for the National Register.

Section 106 also requires that the Commission seek concurrence with the New York SHPO on any finding involving effects or no effects on historic properties and allow the Advisory Council on Historic Preservation (Advisory Council) an opportunity to comment on any finding of effects on historic properties. If Native American properties have been identified, section 106 requires that the Commission consult with interested Native American tribes that might attach religious or cultural significance to such properties.

On May 19, 2015, the Commission designated Erie as the non-federal representative for carrying out day-to-day consultation regarding the licensing efforts pursuant to section 106 of the NHPA. However, the Commission remains largely responsible for all findings and determinations regarding the effects of the proposed project on any historic property, pursuant to section 106.

Area of Potential Effect

Pursuant to section 106 of the NHPA, the Commission must take into account whether any historic property could be affected by a new license within the project's APE. The APE is defined as the geographic area or area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE for this project is all lands within the Granby Project's boundary and any lands outside of the project boundary where cultural

resources may be affected by project-related activities that are conducted in compliance with the license during the license term.

General History of the Region

Archaeological evidence suggests prehistoric groups settled in the Oswego County region from at least 4500 BC to AD 1650. Isolated projectile points found within the county indicate sporadic occupations by Paleo-Indian and Early-Middle Archaic foragers. As early as the mid-18th century, the value of a water-based route running across the State of New York was evident due to long travel times associated with miles of roads criss-crossing the state. The War of 1812 demonstrated the need for a waterway that could facilitate the transportation of goods, troops, and ships. In 1817, the State of New York funded construction of the Erie Canal, which was completed in 1825.

Also in 1825, the State of New York authorized funds to construct the Oswego Canal to link Lake Ontario and the Erie Canal. The newly constructed Oswego Canal ran mostly parallel to the Oswego River except for in a few areas. The canal contained 18 locks and was eventually dredged to a depth of 10 feet. Lock 3 was situated on the opposite side of the river from the current Granby Project in the village of Fulton. Lock 3 and a navigational side-cut helped barges and boats to circumnavigate the lower Oswego Falls; along the side-cut many commercial enterprises emerged to cater to the canal traffic. A large mill complex was constructed at Oswego Falls and its tailrace was able to power a series of smaller mills downstream. The creation of the Oswego Canal turned the city of Oswego into a commercial center of regional importance as the trade of grain, lumber, salt, and manufactured goods increased.

In 1852, the Oswego Canal locks were rebuilt and significantly enlarged, including Lock 3 on the east side of the river. However, due to a series of failures of the earthen and timber dams along the river and canal, the State of New York authorized funding to rebuild all the dams on the Oswego River in masonry in 1865. Slope aprons were added to all the dams in 1887. In 1914, a concrete cap was placed on the Lower Fulton Dam, which is adjacent to the project. Various mills and paper companies occupied the east and west banks of the Oswego River from the mid-1800's through the mid-1900's and now only a handful of industrial centers remain in Fulton. By 1960, Niagara Mohawk Power Corporation controlled the hydroelectric project now known as the Granby Project, using the facility for storage. The Granby Project was expanded and completed by 1983, which included reconstruction of the powerhouse and tailrace.

Cultural Resources Investigation

Erie conducted a Phase 1-A assessment in 2016; Erie identified eight properties listed on the National Register within 1 mile of the project. Two properties designated as eligible for listing on the National Register are located within 1 mile of the project. No

buildings listed on the National Register are located immediately adjacent to the project, however, the Historic District was placed on the National Register in 2015 and is within the project boundary. The Historic District incorporates the tailrace and forebay of the project, but not the hydroelectric powerhouse or any adjacent land.

Erie submitted the Phase 1-A assessment to the New York SHPO in December 2016. On January 6, 2017, the New York SHPO responded by indicating that no historic properties would be affected by relicensing the Granby Project.

Traditional Cultural Properties

The Oneida Indian Nation, Onondaga Nation of New York, Seneca Nation of Indians, Tonawanda Band of Seneca Indians of New York, Tuscarora Indian Nation, Mohawk Nation Council of Chiefs, Saint Regis Mohawk Tribe, Delaware Nation, Shinnecock Indian Nation, and the Stockbridge-Munsee Community Band of Mohican Indians were contacted by the Commission on October 16, 2013 and by Erie on December 12, 2014. None of the tribes requested consultation; the Delaware Nation requested contact within 24 hours of any inadvertent discoveries of archaeological sites or objects. None of the consulted tribes reported any known traditional cultural properties within the APE of the project.

3.3.6.2 Environmental Effects

Erie was designated the non-federal representative to initiate section 106 consultation with the New York SHPO in a notice issued by the Commission on May 19, 2015. As part of the relicensing process, Erie completed a Phase 1-A assessment evaluating the historical and archaeological aspects of the project. Erie determined that while the project is located in an area that contains pre-contact and historic archaeological features and deposits, the archaeological potential of the project no longer remains due to significant alterations to the facility. The substantial widening and deepening of the tailrace and complete reconstruction of the facility likely destroyed any remaining archaeological deposits. Additionally, because the project is less than 50 years old, it is not eligible for listing in the National Register.

Staff Analysis

In accordance with section 106, Erie has consulted with the New York SHPO and Native American tribes to determine the effects of project operation on cultural resources. Neither the New York SHPO nor any Native American tribes identified any concerns with relicensing the project. Continued operation of the project would not affect the Historic District, even though it is listed on the National Register, because the Historic District continues to be used as a lock system for navigation, which was its original intended purpose. Current operations do not affect cultural resources and during the

Phase 1-A assessment Erie performed, no archaeological resources were discovered in the APE; therefore, relicensing the project would have no effect on cultural or archaeological resources.

The possibility remains that during the term of any license issued, archaeological or cultural resources could be discovered during project-related activities that require ground disturbance. To ensure the proper treatment of any potential archaeological or cultural resources that may be encountered during the term of the license, it would be reasonable for Erie to notify the Commission and the New York SHPO and discontinue all ground-disturbing activities until it can be determined whether any measures are needed.

3.4 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate as it has in the past. None of the licensee's proposed measures or the resource agencies' recommendations would be required. Improvements to trashracks to minimize entrainment and impingement would not be implemented, eel and fish passage facilities would not be constructed, and vegetation and wildlife would not be protected.

4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the Granby Project's use of the Oswego River for hydropower purposes to see what effect various environmental measures would have on the project's costs and power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp*.,[44] the Commission compares the current project cost to an estimate of the cost of obtaining the same amount of energy and capacity using a likely alternative source of power for the region (cost of alternative power). In keeping with Commission policy as described in *Mead*, our economic analysis is based on current electric power cost conditions and does not consider future escalation of fuel prices in valuing the hydropower projects' power benefits.

For each of the licensing alternatives, our analysis includes an estimate of: 1) the cost of individual measures considered in the EA for the protection, mitigation, and enhancement of environmental resources affected by the project; 2) the cost of alternative power; 3) the total project cost (i.e., for operation, maintenance, and environmental measures); and 4) the difference between the cost of alternative power and total project cost. If the difference between the cost of alternative power and total project cost is positive, the project produces power for less than the cost of alternative power. If the difference between the cost of alternative power and total project cost is negative, the project produces power for more than the cost of alternative power. This estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license. However, project economics is only one of many public interest factors the Commission considers in determining whether, and under what conditions, to issue a license.

4.1 POWER AND DEVELOPMENTAL BENEFITS OF THE PROJECT

Table 4 summarizes the assumptions and economic information we use in our analysis. This information, except as noted, was provided by Erie in its license application and subsequent submittals. We find that the values provided by the applicant are reasonable for the purposes of our analysis. Cost items common to all alternatives include: taxes and insurance costs; estimated future capital investment required to maintain and extend the life of plant equipment and facilities; relicensing costs; and normal operation and maintenance cost. Values provided by Erie in its license application were indexed to 2019 dollars.

[44] *See Mead Corporation, Publishing Paper Division*, 72 FERC ¶ 61,027 (1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel cost is the largest component of the cost of electricity production.

Table 4. Parameters for economic analysis of the Granby Project (Sources: Erie and staff).

Parameter	Value
Period of analysis	30 years
Term of financing	20 years
Net investment[a]	$15,295,000 (2019)
Annual operation and maintenance[b]	$674,878 (2019)
Cost to prepare the license application	$360,622 (2019)
Federal income tax rate	21 percent
Local tax rate	3 percent
Dependable capacity[c]	9.84 MW
Cost of capital[d]	8 percent
Discount rate[d]	8 percent
Energy rate[e]	$28.77/MWh
Capacity rate[e]	$199.00/kilowatt-year

[a] Remaining undepreciated net investment.
[b] Includes insurance cost.
[c] Average of summer and winter dependable capacities provided by Erie.
[d] Assumed by staff.
[e] Source: Energy Information Administration's Annual Energy Outlook 2019 at http://www.eia.gov/outlooks/aeo/index.cfm. The energy rate includes ancillary services values.

4.2 COMPARISON OF ALTERNATIVES

Table 5 summarizes the installed capacity, annual generation, cost of alternative power, estimated total project cost, and difference between the cost of alternative power and total project cost for each of the alternatives considered in this EA: the no-action alternative, Erie's proposal, and the staff alternative.

Table 5. Summary of the annual cost of alternative power and annual project cost for the alternatives for the Granby Project (Source: Staff).

	No-Action Alternative	Erie's Proposal	Staff Alternative
Installed capacity (MW)	10.08	10.08	10.08
Annual generation (MWh)	44,181	43,875	43,875
Dependable capacity (MW)	9.84	9.84	9.84
Annual cost of alternative power ($/MWh)	$3,229,189 73.09	$3,220,425 73.40	$3,220,425 73.40
Annual project cost ($/MWh)	$2,671,656 60.47	$2,781,440 63.39	$2,781,532 63.40
Difference between the cost of alternative power and project cost ($/MWh)	$557,533 12.62	$438,985 10.01	$438,893 10.00

4.2.1 No-Action Alternative

Under the no-action alternative, the Granby Project would continue to operate as it does now. With an installed capacity of 10.08 MW, the project generates an average of 44,181 MWh of electricity annually. The average annual cost of alternative power would be $3,229,189, or about $73.09/MWh. The average annual cost of producing this power, including depreciation, operation and maintenance costs, and taxes would be about $2,671,656, or about $60.47/MWh. Overall, the project would produce power at a cost that is $557,533, or $12.62/MWh, less than the cost of alternative power.

4.2.2 Applicant's Proposal

Under Erie's proposal, the project would continue to operate with an installed capacity of 10.08 MW and would have an average annual generation of 43,875 MWh. The average annual cost of alternative power would be $3,220,425, or about $73.40/MWh. The average annual project cost would be $2,781,440, or $63.39/MWh. Overall, the project would produce power at a cost that is $438,985, or $10.01/MWh, less than the cost of alternative power.

4.2.3 Staff Alternative

The staff alternative would have the same capacity and energy attributes as the applicant's proposal. Table 6 presents the staff-recommended additions, deletions, and

modifications to the applicant's proposed environmental protection and enhancement measures and the estimated cost of each.

Based on a total installed capacity of 10.08 MW and an average annual generation of 43,875 MWh, the cost of alternative power would be $3,220,425, or about $73.40/MWh. The average annual project cost would be $2,781,532, or $63.40/MWh. Overall, the project would produce power at a cost that is $438,893, or $10.00/MWh, less than the cost of alternative power.

4.3 COST OF ENVIRONMENTAL MEASURES

Table 6 gives the cost of each of the environmental enhancement measures for the project considered in our analysis. All costs in table 6 are in 2019 dollars. We convert all costs to equal annual (levelized) values over a 30-year period of analysis to give a uniform basis for comparing the benefits of a measure to its cost.

Table 6. Cost of environmental mitigation and enhancement measures considered in assessing the environmental effects of continuing to operate the Granby Project (Sources: Staff and Erie).

Enhancement/Mitigation Measures	Entity	Capital Cost	Annual Cost	Levelized Annual Cost
Develop an erosion and sediment control plan for fish and eel passage facility construction.	Staff	$1,000	$0	$92
Install seasonal trashracks with either 1-inch clear spacing or equivalent protection (e.g., seasonal overlays) within 5 years.[a]	Erie, Interior, New York DEC, Staff	$560,000	$40,000	$83,073
Install and maintain a seasonal downstream fish passage structure within 18 months.	Erie, Interior, New York DEC, Staff	$154,552	$1,030	$15,020
Provide a seasonal attraction flow of 80 cfs through the existing project log sluice.	Erie, Interior, New York DEC, Staff	$0	$8,804 (loss of energy)	$6,955[b]
Install and operate a seasonal ladder for upstream passage of American eel.	Erie, Interior, New York DEC, Staff	$77,276	$6,182	$11,987
Implement the proposed Invasive Plant Species Management Plan filed with the Settlement Agreement, which includes BMPs to minimize the spread of aquatic and terrestrial invasive plants during construction, operation, and maintenance.	Erie, Interior, New York DEC, Staff	$1,500	$500	$533

Enhancement/Mitigation Measures	Entity	Capital Cost	Annual Cost	Levelized Annual Cost
Implement the proposed Bat and Bald Eagle Protection Plan filed with the Settlement Agreement, which includes seasonal restrictions on tree clearing in proximity to bald eagle nests, and Indiana or northern long-eared bats roost trees or hibernacula.	Erie, Interior, New York DEC, Staff	$2,500	$1,000	$1,020
Consult with the New York SHPO if previously unidentified cultural resources are discovered to ensure proper treatment of the resources	Staff	$0	$0	$0

Note: Costs provided by the applicant are indexed to 2019 dollars.

[a] Staff assumes an overlay-type system for estimating the costs, including a gantry system for operating the trashrack overlay.

[b] Cost based on a loss of 306 MWh in generation provided by the applicant.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When we review a hydropower project, we consider water quality, fish and wildlife, recreation, cultural, and other non-developmental values of the involved waterway equally with its electric energy and other developmental values. In deciding whether, and under what conditions, a hydropower project should be licensed, the Commission must determine that the project would be best adapted to a comprehensive plan for improving or developing the waterway. We weigh the costs and benefits of our recommended alternative against other proposed measures. This section contains the basis for, and a summary of, our recommendations for relicensing the Granby Project.

Based on our independent review of agency and public comments filed on the project and our review of the environmental and economic effects of the proposed project and its alternatives, we selected the proposed action with staff-recommended modifications as the preferred alternative. We recommend this alternative because: (1) issuance of a new license would allow Erie to continue to operate the Granby Project and provide a beneficial and dependable source of electrical energy; (2) the 10.08 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution; (3) the public benefits of this alternative would exceed those of the no-action alternative; and (4) the recommended measures would protect and enhance environmental resources affected by the project.

In the following section, we make recommendations as to which environmental measures proposed by Erie or recommended by agencies or other entities, should be included in any license issued for the project. In addition to Erie's proposed environmental measures listed below, we recommend additional staff-recommended environmental measures to be included in any license issued for the project.

5.1.1 Measures Proposed by Erie

Based on our analysis of Erie's proposal in section 3, and the costs discussed in section 4, we recommend including the following environmental measures proposed by Erie in any license issued for the Granby Project:

- Install seasonal trashracks with either 1-inch clear spacing or equivalent protection (e.g., seasonal overlays) within 5 years of the issuance and

acceptance or the effective date of any new license, whichever is later, and operate in accordance with the Trashrack and Fishway Operations and Maintenance Plan (section 3.1.1.1 of the Settlement Agreement);

- Install and maintain a seasonal downstream fish passage structure for the downstream movement of American eel, lake sturgeon, and other fish species found in the Oswego River within 18 months of the issuance and acceptance or the effective date of any new license, whichever is later (section 3.1.1.2 of the Settlement Agreement);

- Exert reasonable best efforts to provide a seasonal (May 1 to November 30) attraction flow of 80 cfs through the existing project log sluice to facilitate fish passage when the project is operating (section 3.1.1.2.1 of the Settlement Agreement);

- Install a seasonal (June 15 to September 15) American eel ladder within 4 months of the issuance and acceptance or the effective date of the new license, whichever is later, to facilitate upstream eel passage (section 3.1.1.3 of the Settlement Agreement);

- Implement the proposed Invasive Plant Species Management Plan filed with the Settlement Agreement; and

- Implement the proposed Bat and Bald Eagle Protection Plan filed with the Settlement Agreement.

5.1.2 Additional Staff-Recommended Measures

Under the staff alternative, the project would be operated with Erie's proposed measures, as identified above, and the following additions or modifications:

- Develop an erosion and sediment control plan to minimize effects related to constructing the proposed downstream fish passage facilities and modifying the trashracks;

- Define "reasonable best efforts," as described in section 3.1.1.2.1 of the Settlement Agreement, in providing a seasonal (May 1 to November 30) attraction flow of 80 cfs through the Granby Project's log sluice when the Granby Project is operating subject to the operating requirements and allowances of the Oswego River Project license; and

- Consult with the New York SHPO if previously unidentified cultural resources are encountered during the term of the license to ensure the proper treatment of these resources and discontinue all ground-disturbing activities until the proper treatment of the resources is established.

Below we discuss the basis for our staff-recommended measures and the rationale for modifying Erie's proposal.

Erosion and Sedimentation Control

Construction activities associated with the upstream and downstream fish passage facilities at the Granby Project may result in some riverbed disturbance and could result in sediment reaching or suspending within the Oswego River. Developing and implementing an erosion and sediment control plan with procedures and BMPs to minimize erosion, contain sediment, stabilize soils after construction is complete, and minimize turbidity, would minimize effects to soils and aquatic resources associated with construction-related activities. Minimizing sediment transport from construction areas to the Oswego River would help preserve water quality in the river and protect fish and other aquatic biota. We estimate that the levelized annual cost to develop an erosion and sediment control plan would be $92 and conclude that the benefits of the measure would outweigh the costs.

Fish Protection

The powerhouse intake has the potential to affect the impoundment fishery by entraining fish or impinging fish against the trashrack, resulting in injury or mortality. To reduce entrainment and impingement, Erie proposes to install seasonal (May 1 to November 30) trashracks with either 1-inch clear spacing or equivalent protection (e.g., seasonal overlays) within 5 years of the issuance and acceptance or the effective date of any new license, whichever is later. The design of the trashracks would be developed in consultation with FWS and New York DEC, and Erie would provide the agencies with the design plan at least six months prior to installation. Installation, inspection, and maintenance, including debris removal, would be performed as specified in the Trashrack and Fishway Operations and Maintenance Plan.

As evidenced by their execution of the Settlement Agreement, FWS and New York DEC support Erie's proposed fish protection measure. Most species of adult gamefish would be able to escape the intake velocity and avoid impingement and entrainment at the existing trashrack. However, the existing trashrack spacing excludes only the largest lake sturgeon, while American eel and other species moving downstream could suffer very high mortality if entrained through the project's turbines. Seasonal trashracks with 1-inch clear spacing would protect outmigrating silver phase American eel and other resident species from injury and mortality. We estimate that the levelized

annual cost to implement seasonal trashracks would be $83,073 and conclude that the benefits of the measure would outweigh the costs.

Downstream Fish Passage

The existing downstream passage routes for fish at the Granby Project are through the powerhouse, where fish may suffer injury and mortality due to turbine blade strikes, over the Lower Fulton Dam, seasonally through the lock, and through the seasonal downstream fish passage facilities at the Fulton Development. Erie proposes to provide seasonal (May 1 to November 30) downstream passage though the existing log sluice and to construct a plunge pool for fish moving downstream through the log sluice, within 18 months of the issuance and acceptance or the effective date of any new license. Erie would work with FWS and New York DEC to design the structure and ensure that it meets applicable FWS design criteria and standards. Final design and engineering specifications of the downstream passage structure would be provided to FWS and New York DEC 12 months prior to installation. Further, a seasonal attraction flow (80 cfs) through the log sluice would be provided to the extent practical by maintaining impoundment elevation at the top of the flashboards. Since the Oswego River Project license allows for a 0.5-foot fluctuation in the impoundment elevation, there may be times when the attraction flow drops below 80 cfs. Operation, inspection, and maintenance would be performed in accordance with the Trashrack and Fishway Operations and Maintenance Plan. During the downstream passage season, Erie would ensure that the attraction flow is in place at least 30 minutes prior to unit start-up and for at least 30 minutes after the units are shut down. Erie would prepare an annual report following construction to document the success rates of maintaining the impoundment levels.

As evidenced by their execution of the Settlement Agreement, FWS and New York DEC support Erie's proposed fish passage measures. Taken together with the fish protection measures described above, downstream fish passage facilities would provide a safe and efficient alternative for downstream movement of American eel, lake sturgeon, and other resident gamefish. Therefore, we recommend Erie's proposed downstream fish passage structure as described in the Settlement Agreement. We estimate that the levelized annual cost to install this structure and provide the attraction flow would be $23,370 and conclude that the benefits of the structure would outweigh the costs.

Upstream Eel Passage

The Lower Fulton Dam is likely a barrier to the upstream migration of American eel throughout most of the year. Therefore, Erie proposes to provide seasonal upstream passage for eel within 4 months of the issuance and acceptance or the effective date of any license, whichever is later. Upstream passage would be achieved through the deployment of an eel ladder from June 15 through September 15. In the event that the

effective date of the new license would result in a required installation date outside of this time period, the required installation date would be extended to the beginning of the next season (June 15). Installation, inspection, and maintenance would be performed as specified in the Trashrack and Fishway Operations and Maintenance Plan. The ladder would include an attraction flow, a continuous flow within the ladder, and a collection tank. Captured eels would be transported to the upstream end of the river left forebay wall to avoid entrainment through the turbines or fallback over the dam. The design of the ladder would be developed in consultation with FWS and New York DEC, and Erie would provide the agencies with a ladder design 6 months prior to installation. Erie proposes to prepare and provide an annual report for FWS and New York DEC describing the season's operation of the eel ladder, including daily counts of eels captured and released. As evidenced by their execution of the Settlement Agreement, FWS and New York DEC support Erie's proposed upstream eel passage measure.

In conjunction with other nearby hydroelectric projects with eel passage facilities, eel passage at the Granby Project would improve access to upstream Oswego River habitat and numerous tributaries. As such, we recommend Erie's upstream eel passage measures as described in the Settlement Agreement. We estimate that the levelized annual cost to implement the eel passage measures would be $11,987 and conclude that the benefits of these measures would outweigh the costs.

Invasive Plant Species Management

Several aquatic and terrestrial invasive plant species occur at the Granby Project. The Invasive Plant Species Management Plan, filed with the Settlement Agreement, includes measures to prevent the introduction and spread of terrestrial and aquatic invasive plant species, such as employing BMPs during construction or maintenance, cleaning and drying boats that come into contact with water, and use of invasive-free materials and seed stock during replanting. We estimate that the levelized annual cost to implement the plan would be $500 and conclude that the benefits of the measure would outweigh the costs.

Bat and Bald Eagle Protection

Performing maintenance at the project could potentially require clearing of forested habitat, and thus impact summer roosting habitat for the federally listed endangered Indiana and threatened northern long-eared bats, and nesting habitat for the state-listed threatened bald eagle. Suitable summer roosting habitat for the Indiana and northern long-eared bats exists within the project boundary, and bald eagles have been observed near the project during the breeding season. The Bat and Bald Eagle Protection Plan, filed with the Settlement Agreement, includes provisions to: (1) notify FWS and New York DEC if bald eagle nesting activity or a northern long-eared bat roost tree or hibernacula is discovered within or immediately adjacent to the project boundary; (2)

modify the timing of tree-clearing activity to minimize impacts on bald eagles; and (3) modify the timing of certain tree-clearing activities, or obtain prior consultation with FWS and New York DEC, to minimize the impacts to Indiana and northern long-eared bats. We estimate that the levelized annual cost to implement the plan would be $1,000 and conclude that the benefits of the measure would outweigh the costs.

Cultural Resources Protection

Archaeological or historic sites could be discovered during land-disturbing activities associated with project operation over the term of a license. Therefore, we recommend that Erie notify the Commission and the New York SHPO if previously unidentified archaeological or historic resources are discovered during the term of any license issued. In the event of any such discovery, Beaver Falls LLC should discontinue any ground-disturbing activities until the need for treatment of the archaeological or historic resource is established.

5.2 UNAVOIDABLE ADVERSE EFFECTS

Some fish entrainment and turbine-induced mortality is likely unavoidable, even with the proposed downstream fish protection and passage measures. With the proposed seasonal trashracks with 1-inch clear bar spacing or equivalent protection (e.g. seasonal overlays), most adult fish could avoid involuntary entrainment, but entrainment of some small fish could still occur. However, we expect the long-term impact of entrainment to have minimal consequences to the fish communities in the Oswego River because only small fish would pass through the turbines and larger fish would either remain upstream of the project or pass safely downstream through the proposed downstream fish passage structure.

Construction activities associated with the upstream and downstream fish passage facilities may cause limited erosion and sedimentation, which may affect aquatic and terrestrial biota. However, these construction-related effects are expected to be short-term (e.g., weeks or months) and minor, and any impact to fish and wildlife would be minimal. Also, construction-related erosion and sedimentation would be minimized with implementation of an erosion and sediment control plan.

5.3 SUMMARY OF SECTION 10(j) RECOMMENDATIONS

Under the provisions of section 10(j) of the FPA, each hydroelectric license issued by the Commission should include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of fish and wildlife resources affected by the project.

Section 10(j) of the FPA states that whenever the Commission believes that any fish and wildlife agency recommendation is inconsistent with the purposes and the requirements of the FPA or other applicable law, the Commission and the agency will attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of the agency.

In response to our November 16, 2018 notice soliciting comments, recommendations, terms and conditions, and prescriptions, Interior filed one section 10(j) recommendation for the project on April 4, 2019. Table 7 lists the recommendation filed subject to section 10(j) and indicates whether the recommendation is included under the staff alternative.

Table 7. Analysis of fish and wildlife agency recommendations for the Granby Project (Source: Staff).

Recommendation	Agency	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
Implement the Bat and Bald Eagle Protection Plan incorporated as Appendix B in the Settlement Agreement for the purpose of minimizing the effects of tree clearing on Indiana and northern long-eared bats and bald eagle.	Interior	Yes	$1,020	Yes

5.4 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA, 16 U.S.C. § 803(a)(2)(A), requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. We reviewed 11 qualifying comprehensive plans that are applicable to the Granby Project, located in New York. No inconsistencies were found.

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6.0 FINDING OF NO SIGNIFICANT IMPACT

If the Granby Project is relicensed as proposed with the additional staff-recommended measures, the project would operate while providing enhancements and protective measures for aquatic, terrestrial, and cultural resources in the project area.

Based on our independent analysis, issuance of a license for the project, as proposed with additional staff-recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

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