ENVIRONMENTAL ASSESSMENT
FOR
HYDROPOWER LICENSE

Superior Falls Hydroelectric Project
FERC Project No. 2587-066
Michigan and Wisconsin

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

November 2025

COMMISSION STAFF PAGE LIMIT AND DEADLINE CERTIFICATIONS

I certify that Commission staff has considered the factors mandated by the National Environmental Policy Act (NEPA) and that this environmental document represents a good-faith effort to disclose the most important considerations required by NEPA within the statutory page limit (42 U.S.C. § 4336a(e)) and the statutory deadline (42 U.S.C. § 4336a(g)). This certification reflects staff's expert judgment that the analysis contained within this environmental document is an accurate representation of the potential environmental effects of the proposed action and the analysis is substantially complete. In staff's judgment, any considerations addressed briefly or left unaddressed would not meaningfully inform the assessment of environmental effects.

Nicholas Jayjack
Director
Division of Hydropower Licensing

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ACRONYMS AND ABBREVIATIONS

Advisory Council	Advisory Council on Historic Preservation
APE	area of potential effects
BITP/A	Wisconsin Department of Natural Resources' Broad Incidental Take Permit/Authorization
BMPs	Best Management Practices
certification	water quality certification
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dbh	diameter at breast height
DO	dissolved oxygen
EA	Environmental Assessment
EIA	U.S. Energy Information Administration
ESA	Endangered Species Act
˚F	degrees Fahrenheit
fps	feet per second
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
FWS	U.S. Fish and Wildlife Service
Gile Association	Friends of the Gile Flowage Lake Association
Gile Project	Gile Flowage Storage Reservoir Project
HPMP	Historic Properties Management Plan
Interior	U.S. Department of the Interior
IPaC	Information for Planning and Consultation
kV	kilovolt
kW	kilowatt
mg/L	milligrams per Liter
Michigan DNR	Michigan Department of Natural Resources
Michigan EGLE	Michigan Department of Environment, Great Lakes, and Energy
Michigan HRC	Michigan Hydro Relicensing Coalition
Michigan SHPO	Michigan State Historic Preservation Officer
MISO	Midcontinent Independent System Operator, Inc.
MRO	Midwest Reliability Organization
MW	megawatt
MWh	megawatt-hour
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NHI	Wisconsin's Natural Heritage Inventory
NHPA	National Historic Preservation Act of 1966
NLEB	northern long-eared bat

Northern States	Northern States Power Company
Park Service	U.S. National Park Service
PM&E	Protection, Mitigation, and Enhancement
project	Superior Falls Hydroelectric Project
QR code	Quick Response code
REA	Ready for Environmental Analysis
River Alliance	River Alliance of Wisconsin
Saxon Project	Saxon Falls Hydroelectric Project
SD1	Scoping Document 1
SD2	Scoping Document 2
Superior Project	Superior Falls Hydroelectric Project
TCB	tricolored bat
THPO	Tribal Historic Preservation Officer
U.S.C.	United States Code
USGS	United States Geological Survey
Wisconsin DOA	Wisconsin Department of Administration
Wisconsin DNR	Wisconsin Department of Natural Resources
Wisconsin SHPO	Wisconsin State Historic Preservation Officer

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1.0 INTRODUCTION

1.1 APPLICATION

On December 30, 2022, Northern States Power Company (Northern States) filed an application with the Federal Energy Regulatory Commission (Commission or FERC) for a new license to continue to operate and maintain the Superior Falls Hydroelectric Project No. 2587 (Superior Project or project).[1] The 1.65-megawatt (MW) project is located on the Montreal River in Gogebic County, Michigan, and Iron County, Wisconsin (Figure 1).[2]

1.2 PURPOSE OF ACTION AND NEED FOR POWER

1.2.1 Purpose of Action

The purpose of the 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 Northern States for the 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 will be best adapted to a comprehensive plan for improving or developing the waterway. In addition to the power and developmental purposes for which licenses are issued (such as flood control, irrigation, and water supply), the Commission

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[1] The Commission issued the original license for the project on October 9, 1968, with an effective date of May 1, 1965, and an expiration date of December 31, 1993. *See Lake Superior District Power Company*, 40 FPC ¶ 1023 (1968). The Commission issued the current license for the project on January 19, 1995, for a term of 30 years, with an effective date of January 1, 1995, and an expiration date of December 31, 2024. *See Northern States Power Company – Wisconsin*, 70 FERC ¶ 62,029 (1995). Since the expiration date, Northern States has continued to operate the project pursuant to section 16.18 of the Commission's regulations, pending the disposition of the relicense application. *See* January 24, 2025 Notice of Authorization for Continued Project Operation.

[2] The Superior Project is part of a complete unit of development that includes the Saxon Falls Project No. 2610 (Saxon Project) and the Gile Flowage Storage Reservoir Project No. 15055 (Gile Project). *See Northern States Power Company – Wisconsin*, 172 FERC ¶ 62,093 (2020). Northern States filed a license application for the Saxon Project on December 30, 2022, and the Gile Project on August 18, 2023.

must give equal consideration to the purposes of: (1) energy conservation; (2) the protection of, 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. Issuing a new license for the project would allow Northern States to continue to generate electricity at the project for the term of the license, making electric power from a renewable resource available to the regional electric grid.

We prepared this environmental assessment (EA) in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA)[3] and the Commission's implementing regulations.[4] This EA assesses the environmental and economic effects associated with continued operation of the project and alternatives to the proposed project. It includes 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: (1) no action (No-Action Alternative); (2) operating and maintaining the project as proposed by Northern States (Proposed Action); and (3) operating and maintaining the project as proposed by Northern States, with additional and modified measures recommended by Commission staff (Staff Alternative). Under the No-Action Alternative, the project would continue to operate as it does under the current license, and no new environmental protection, mitigation, or enhancement (PM&E) measures would be implemented. The primary issues associated with relicensing the project are the effects of relicensing the project on aquatic, terrestrial, recreation, and cultural resources, and federally listed endangered species.

1.2.2 Need for Power

The project provides hydroelectric generation to meet part of the region's power, resource diversity, and capacity needs. The project has an installed capacity of 1.65 MW and an average annual energy production of 9,034.8[5] megawatt-hours (MWh) from 2017 to 2021.

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[3] National Environmental Policy Act of 1969, amended (Pub. L. 91-190. 42 U.S.C. §§ 4321–4347, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, Pub. L. 97-258, §4(b), September 13, 1982, Pub. L. 118-5, June 3, 2023).

[4] 18 C.F.R. pt. 380 (2025).

[5] The total average annual energy production at the project is 11,436.4 MWh. However, the Gile Project accounts for 21% of the total generation at the project. *See Northern States Power Company – Wisconsin*, 172 FERC ¶ 62,093, at P 5 (2020). Therefore, staff reduced the average annual energy production for the Superior Project by 2,401.6 MWh to account for the energy contributions from the Gile Project.

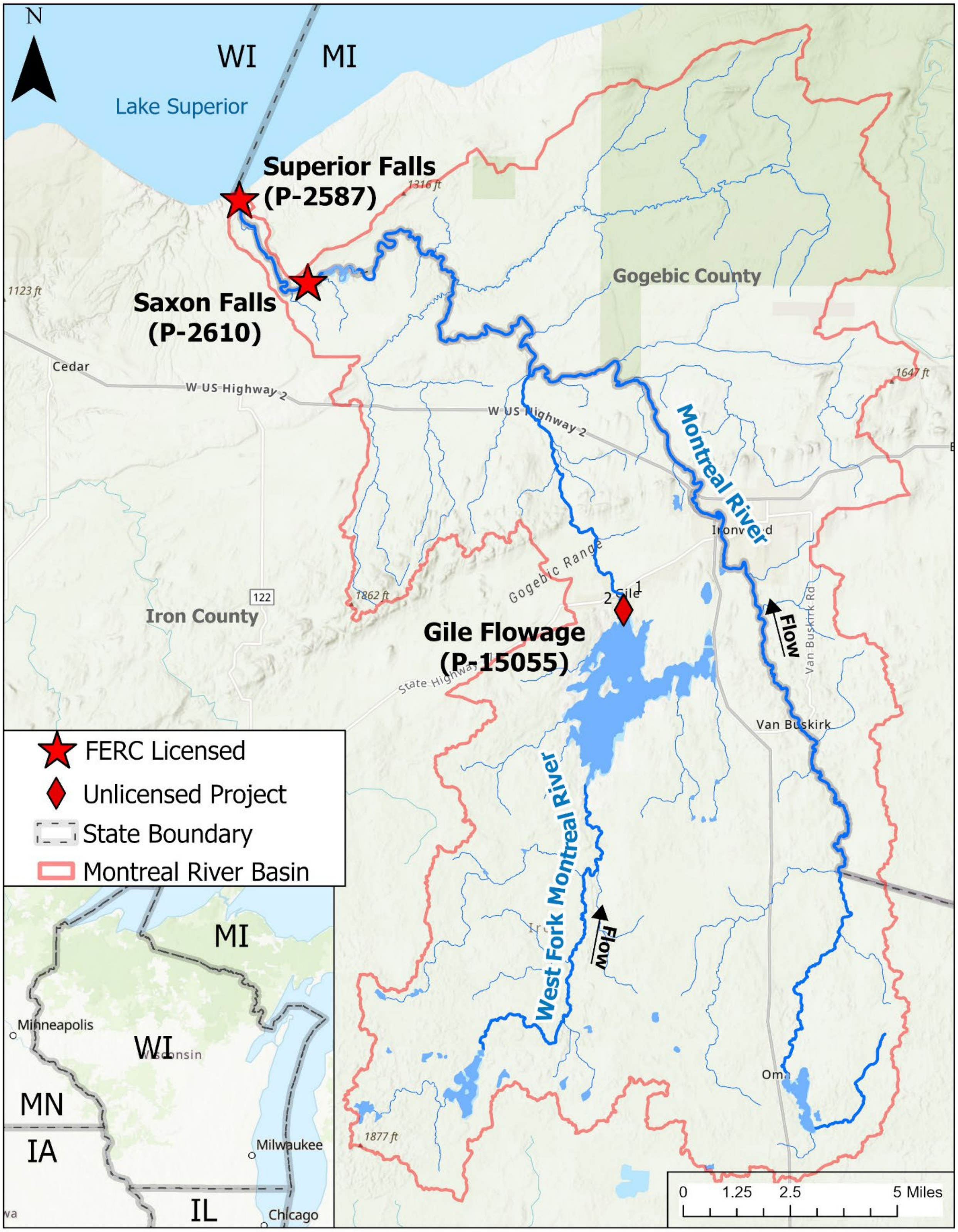

Figure 1. Location of the Superior Project and other FERC-licensed and unlicensed hydroelectric projects in the Montreal River Basin (Source: Staff).

To assess the need for power, we looked at the needs in the operating region in which the project is located. Power produced at the project is used to support demand in the Midcontinent Independent System Operator, Inc. (MISO) assessment area of the Midwest Reliability Organization (MRO) region. MRO is a regional electric reliability council in the North American Electric Reliability Corporation (NERC). NERC annually forecasts electrical supply and demand in the nation and region for a 10-year period. According to NERC's 2024 Long-Term Reliability Assessment for the period from 2025 through 2034, the annual total internal demand in the MISO assessment area is expected to increase from 122,328 MW in 2025 to 131,952 MW in 2034 (NERC, 2024). The anticipated reserve margin (i.e., the primary metric used to evaluate the adequacy of projected generation resources to serve forecasted peak load) in the assessment area is projected to decrease from 17% in 2025 to 4.2% in 2034. MISO's reference reserve margin (i.e., the targeted reserve margin) increases from 9.2% in 2025 to 9.7% in 2034 (NERC, 2025). The anticipated reserve margin for the MISO assessment area is forecasted to be below MISO's targeted reserve margin from 2031 through 2034. If relicensed, power from the project would continue to help meet a need for power in the MISO assessment area in both the short and long-term.

1.3 STATUTORY AND REGULATORY REQUIREMENTS

Any license for the project would be subject to numerous requirements under the FPA and other applicable statutes. The major regulatory and statutory requirements are described in Appendix D, *Statutory and Regulatory Requirements*.

1.4 PUBLIC REVIEW AND COMMENT

The Commission's regulations (18 C.F.R. § 16.8) require applicants 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 (16 U.S.C. § 661 et seq.), Endangered Species Act (ESA) (16 U.S.C. § 1536), National Historic Preservation Act (NHPA) (54 U.S.C. § 306108), and other federal statutes. Pre-filing consultation must be completed and documented according to the Commission's regulations.

1.4.1 Scoping

Before preparing this EA, Commission staff conducted scoping to determine what issues and alternatives should be addressed for the project's proposed relicensing. Scoping Document 1 (SD1) was distributed to interested agencies, Tribes, and others on August 25, 2023. On that same day, the Commission issued a notice setting October 30, 2023, as the deadline for filing comments on SD1.[6] The notice was published in the *Federal Register* on August 31, 2023.[7] Two scoping meetings were held to obtain comments on the project on September 27 and 28, 2023, in Hurley, Wisconsin. A court reporter recorded all comments and statements made at the scoping meetings, and a transcript is part of the Commission's public record for the project. In addition to the comments provided at the scoping meetings, the following entities filed comments.

Commenting Entity	**Filing Date**
U.S. National Park Service (Park Service)	October 26, 2023
Michigan Department of Natural Resources (Michigan DNR)	October 27, 2023
Michigan Hydro Relicensing Coalition (Michigan HRC)[8]	October 30, 2023
River Alliance of Wisconsin (River Alliance)	October 30, 2023
Michigan Department of Environment, Great Lakes, and Energy (Michigan EGLE)	October 30, 2023

On January 31, 2024, Commission staff issued a revised scoping document, Scoping Document 2 (SD2), addressing the comments.

1.4.2 Interventions

On October 10, 2024, the Commission issued a notice accepting the license application and setting December 9, 2024, as the deadline for filing protests and motions to intervene. The notice was published in the *Federal Register* on October 17, 2024.[9] Michigan DNR filed a timely notice of intervention on December 5, 2024. Michigan EGLE and the U.S. Department of the Interior (Interior), on behalf of the U.S. Fish and Wildlife Service (FWS), Park Service, and

[6] The notice established a 60-day period for filing comments. The Commission's Rules of Practice and Procedure provide that if a filing deadline falls on a Saturday, Sunday, holiday, or other day when the Commission is closed for business, the filing deadline does not end until the close of business on the next business day. 18 C.F.R. § 385.2007(a)(2). Because the 60-day filing deadline fell on a Saturday (i.e., October 28, 2023), the filing deadline was extended until the close of business on Monday, October 30, 2023.

[7] 88 Fed. Reg. 60,201.

[8] The Michigan HRC includes the Michigan United Conservation Clubs, Michigan Council of Trout Unlimited, Great Lakes Council, Inc. of Fly Fishers International, Anglers of the Au Sable, and Michigan Steelhead and Salmon Fishermen's Association.

[9] 89 Fed. Reg. 83,681.

Bureau of Indian Affairs, each filed a timely notice of intervention on December 6, 2024.[10] The following entities filed timely, unopposed motions to intervene.[11]

Filing Entity	**Filing Date**
Michigan HRC	December 3, 2024
Wisconsin DNR	December 5, 2024
American Whitewater	December 9, 2024
River Alliance	December 9, 2024
Friends of the Gile Flowage Lake Association (Gile Association)	December 9, 2024

No intervenors protested the relicensing.

1.4.3 Comments on the Application

On October 10, 2024, the Commission issued a ready for environmental analysis (REA) notice setting December 9, 2024, as the deadline for filing comments, recommendations, terms and conditions, and fishway prescriptions. The notice also established a deadline of January 23, 2025, for filing reply comments. The notice was published in the *Federal Register* on October 17, 2024.[12] Comments and recommendations were filed by the following entities.

Commenting Entity	**Filing Date**
Jeffrey Barden	November 13, 2024
Greg Weiss	November 13, 2024
Park Service	November 14, 2024
Jake Ring	November 18, 2024
Paul Janda	November 19, 2024
Zach Stewart	November 21, 2024
Patrick Wilson	November 29, 2024
Michigan HRC[13]	December 6, 2024
Wisconsin DNR	December 6, 2024
Gile Association	December 9, 2024
River Alliance	December 9, 2024
American Whitewater	December 9, 2024

[10] Under Rule 214(a)(2) of the Commission's Rules of Practice and Procedure, Michigan DNR, Michigan EGLE, FWS, Park Service, and Bureau of Indian Affairs became parties to the proceeding upon the timely filing of its notice of intervention. 18 C.F.R. § 385.214(a)(2) (2025).

[11] Timely, unopposed motions to intervene are granted by operation of Rule 214(c) of the Commission's Rules of Practice and Procedure. 18 C.F.R. § 385.214(c) (2025).

[12] 89 Fed. Reg. 83,681.

[13] Michigan HRC, River Alliance, American Whitewater, Michigan DNR, and Michigan EGLE commented on Northern States' proposal for a 50-year license term. Northern States' proposal will be addressed in the final decision on the relicense application.

Interior	December 9, 2024
Michigan DNR	December 9, 2024
Michigan EGLE[14]	December 9, 2024

Northern States filed reply comments on January 14, 2025.

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 current license, and no new PM&E measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives, and to compare the benefits and costs of any measures that might be required under any new license issued.

2.1.1 Existing Project Facilities

The Superior Project includes a 28.5-foot-high dam known as the Superior Falls Dam, that includes three 12-foot-long weirs with crest elevations of 740.7 feet,[15] an 18-foot-long Tainter gate with a crest elevation of 741.2 feet, a 15.5-foot-long ogee spillway with a crest elevation of 740.2 feet, a 5-foot-long gate with a crest elevation of 738.2 feet, a 4-foot-long gate with a crest elevation of 740.2 feet, two 16-foot-long Tainter gates with crest elevations of 740.2 feet, and a 10-foot-long turbine intake gate with a trashrack with 1-inch clear bar spacing.

The dam creates an impoundment with a surface area of 16.3 acres at the spillway crest elevation of 740.2 feet. From the impoundment, water flows through the intake gate to a 1,697-foot-long pipe, surge tank, and two 207-foot-long penstocks. From the penstocks, water is conveyed to a powerhouse that contains two 825-kilowatt (kW) horizontal Francis turbine-generator units, for a total installed capacity of 1.65 MW. Water is discharged from the powerhouse to an approximately 80-foot-long tailrace. A pipe extends from the 5-foot-long gate of the dam to provide flow to the bypassed reach (minimum flow pipe).[16]

Electricity generated at the powerhouse is transmitted to the electric grid via a 200-foot-long, 2.4-kilovolt (kV) overhead transmission line and a 2.4/34.5-kV step-up transformer.

Project recreation facilities include: (1) a hand-carry boat take-out site and an associated 5-vehicle parking area on the western shoreline of the impoundment, located approximately

[14] Michigan EGLE commented on financial assurances for the project. The need for financial assurances will be addressed in the final decision on the relicense application.

[15] All elevations discussed in this EA are referenced to a vertical datum of National Geodetic Vertical Datum of 1929.

[16] The project creates an approximately 1,900-foot-long bypassed reach of the Montreal River.

1,050 feet upstream of the dam; (2) a scenic overlook on the eastern shoreline of the bypassed reach, located approximately 400 feet upstream of the powerhouse; (3) a fishing area on the eastern shoreline of the tailrace (tailrace fishing site); (4) a parking area for approximately 15 vehicles, located adjacent to the surge tank, that provides access to the scenic overlook and tailrace fishing site and includes a portable toilet; (5) an approximately 225-foot-long access trail from the parking area to the scenic overlook; and (6) associated informational, safety, and Part 8[17] signage.

The project includes the following access roads: (1) an approximately 350-foot-long access road from Lake Superior Road to the dam; and (2) an approximately 150-foot-long powerhouse access road. The project facilities are shown in Figure 2.

2.1.2 Project Boundary Under the Current License

The project boundary under the current license encloses 390.2 acres, including: (1) the 16.3-acre impoundment; (2) 360.4 acres of land, including land underlying project facilities and land adjacent to the bypassed reach, impoundment, and Montreal River upstream of the impoundment; (3) 10.5 acres of water associated with the Montreal River upstream of the impoundment; (4) 2.7 acres of the bypassed reach; and (5) 0.3 acre of water downstream of the powerhouse (Figure 2).

2.1.3 Project Safety

The project has been operating for more than 30 years under its current license. During this time, Commission staff 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 project's facilities under a new license. Special articles will be included in any license issued, as appropriate. Commission staff would continue to inspect the project during the term of any new license to ensure continued adherence to Commission-approved plans and specifications, special license articles relating to construction (if any), operation and maintenance, and accepted engineering practices and procedures.

[17] Part 8 of the Commission's regulations requires a licensee to post and maintain a sign that, at a minimum, identifies: (1) the FERC project name and number, and a statement that the project is licensed by the Commission; (2) the licensee name and contact information for obtaining additional project recreation information; (3) permissible times and activities; and (4) notice that the recreation facilities are open to all members of the public without discrimination. *See* 18 C.F.R. § 8.2.

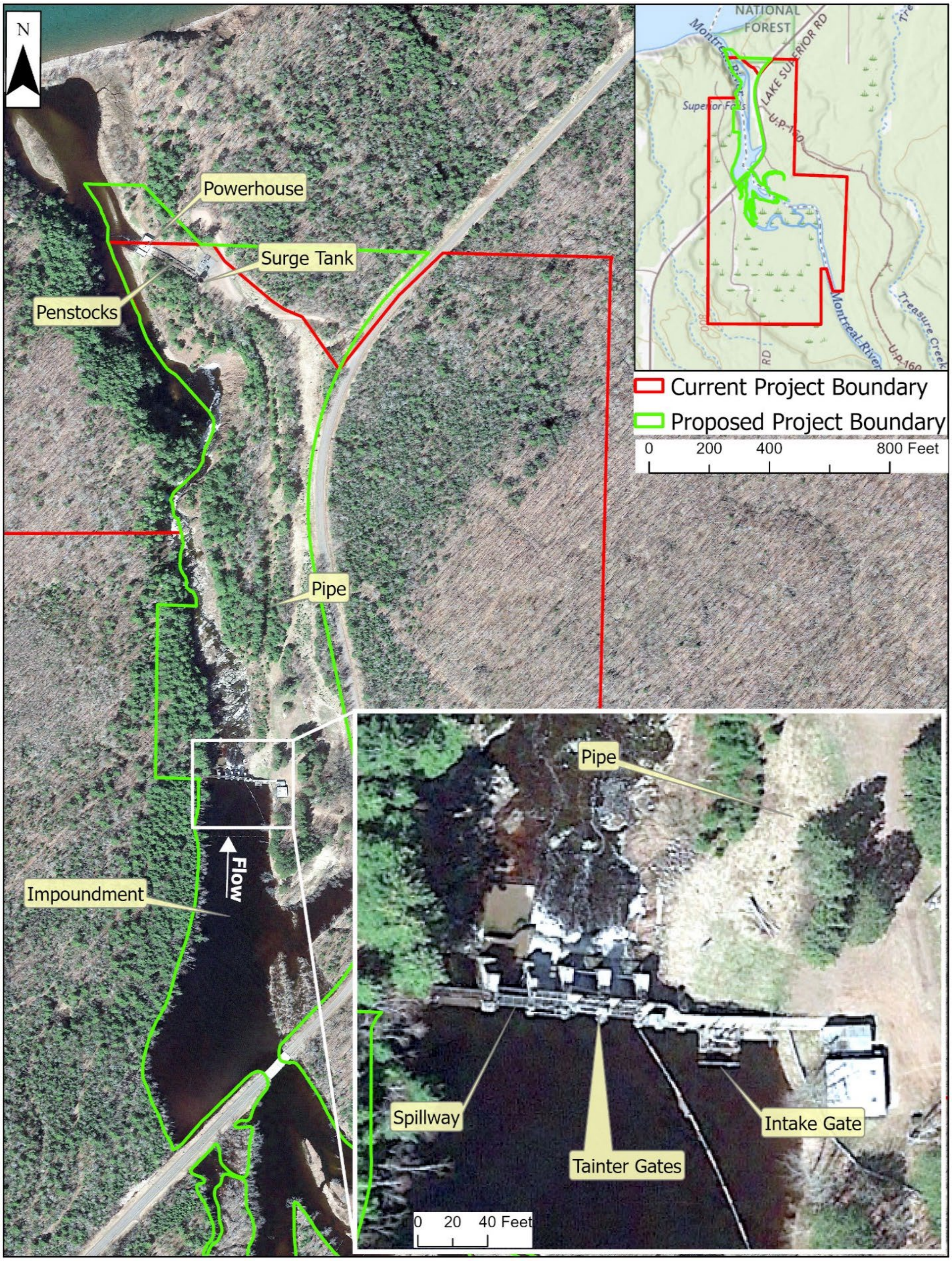

Figure 2. Superior Project facilities (Source: Staff).

2.1.4 Current Project Operation and Environmental Measures

Article 402 of the current license requires Northern States to operate the project in a run-of-river mode, such that at any given point in time, outflow from the project approximates inflow to the impoundment, and a minimum surface elevation of 739.7 feet is maintained in the impoundment.[18] Northern States maintains the normal surface elevation of the impoundment at the spillway crest elevation of 740.2 feet.[19] Article 403 of the current license requires Northern States to limit non-emergency impoundment drawdown rates to a maximum of 1 foot per 24 hours for the first 48 hours and 0.5 foot per 24 hours thereafter.

Article 404 of the current license requires Northern States to release a minimum aesthetic flow of 8 cubic feet per second (cfs) from the minimum flow pipe to the bypassed reach from the Saturday before Memorial Day through October 15. The license also requires Northern States to increase the minimum aesthetic flow to 20 cfs from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period.

The current license also requires Northern States to implement: (1) an Operation Compliance Monitoring Plan for run-of-river operation (Article 402); (2) an Aesthetic Flow Monitoring Plan to monitor and log daily flows in the bypassed reach (Article 405); (3) a Recreation Plan that requires Northern States to maintain project recreation facilities (Article 408); (4) monitoring for purple loosestrife and Eurasian milfoil (Article 409); (5) a Wildlife Management Plan that requires Northern States to maintain wood duck nesting boxes adjacent to the impoundment (Article 410); and (6) a Visual Resource Protection Plan to avoid or minimize disturbances to the quality of the existing visual resources at the project (Article 413).

The minimum and maximum hydraulic capacities of the powerhouse are 25 and 220 cfs, respectively. From the Saturday before Memorial Day through October 15, when inflow is less than 33 cfs (i.e., the 25-cfs minimum hydraulic capacity plus the 8-cfs minimum flow), Northern States does not generate, but releases 8 cfs from the minimum flow pipe and the remaining flow through the Tainter gates. When inflow is more than 33 cfs and less than 228 cfs (i.e., the 220-cfs maximum hydraulic capacity plus the 8-cfs minimum flow), Northern States releases 8 cfs from the minimum flow pipe and up to 220 cfs from the powerhouse. When inflow is greater than 228 cfs, Northern States releases 8 cfs from the minimum flow pipe, up to 220 cfs from the powerhouse, and the remaining flow over the three 12-foot-long weirs and through the Tainter

[18] In an order on rehearing issued on March 31, 1997, the Commission revised Article 402 to require the licensee to maintain the impoundment surface elevation "at a minimum of 739.7 feet," instead of maintaining an impoundment elevation "between a minimum of 739.5 feet and a maximum of 740.0 feet" as initially required in the license order issued on January 19, 1995. *Northern States Power Company*, 78 FERC ¶ 61,363 (1997) (Order on Reh'g). Although the Commission did not include a maximum impoundment elevation in Article 402, it explained that increasing the minimum elevation by 0.2 foot would result "in an elevation minimum of 739.7 feet and a maximum of 740.2 feet, which is the spillway elevation."

[19] *See* section 2.2.2 of Exhibit A of the application.

gates. From October 16 through the Saturday before Memorial Day, Northern States operates in the same manner except it does not release a minimum flow to the bypassed reach.

2.2 PROPOSED ACTION

2.2.1 Proposed Project Facilities

Northern States proposes to maintain the existing facilities described in section 2.1.1, except for the hand-carry boat take-out site and parking area on the western shoreline of the impoundment. Northern States proposes to relocate the hand-carry boat take-out site from the western shoreline of the impoundment to the eastern shoreline of the impoundment, develop a new gravel parking area for six vehicles to provide access to the take-out site on the eastern shoreline of the impoundment, and install associated informational, safety, and Part 8 signage (eastern take-out site).

2.2.2 Proposed Project Boundary

Northern States proposes to enclose 46.1 acres of land and water in the project boundary, including: (1) the 16.3-acre impoundment; (2) 26.8 acres of land that includes land underlying project facilities and land adjacent to project facilities; (3) 2.7 acres of water associated with the bypassed reach; and (4) 0.3 acre of water downstream of the powerhouse (Figure 2).

The proposed project boundary does not include the following land and water that is included in the project boundary under the current license: (1) 266.3 acres of land upstream of the dam, including all land above a contour elevation of 740.2 feet, which is the spillway crest elevation of the dam and the normal surface elevation of the impoundment; (2) 10.5 acres of water associated with the Montreal River upstream of the impoundment; and (3) 67.3 acres of land downstream of the dam, including land adjacent to the bypassed reach and land adjacent to project facilities.

2.2.3 Project Operation and Environmental Measures

Northern States proposes the following operational and environmental measures.[20]

- Implement soil erosion and sediment control best management practices (BMPs) prior to any ground-disturbing activities.

- To monitor erosion in the impoundment, conduct a shoreline erosion survey every 5 years.

- To protect aquatic resources, continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given time

[20] Northern States does not propose to continue monitoring and maintaining the four wood duck boxes required under the current license.

and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet.[21]

- To protect fish from impingement and entrainment, continue to maintain the existing trashrack with 1-inch clear bar spacing at the turbine intake.
- Notify the Commission and resource agencies of planned and unplanned deviations (e.g., impoundment drawdowns), and only modify project operation for short periods of time of up to 3 weeks, after mutual agreement with FWS, Michigan DNR, Michigan EGLE, and Wisconsin DNR.
- Develop an operation compliance monitoring plan to document compliance with project operation that includes the following provisions: (1) locations of headwater monitoring probes/gages; (2) frequency of monitoring; (3) procedures for maintaining and calibrating monitoring equipment; (4) standard operating procedures to be implemented outside of normal operating conditions, such as scheduled or emergency facility shutdowns or maintenance activities; (5) a schedule for installing and operating the monitoring equipment; and (6) notification procedures for planned and unplanned deviations.
- To protect the northern long-eared bat (NLEB) and tricolored bat (TCB), implement Wisconsin DNR's Broad Incidental Take Permit and Broad Incidental Take Authorization (BITP/A) for Wisconsin Cave Bats, filed as Appendix E-41 of the license application, and restrict the removal of trees greater than 3 inches diameter at breast height (dbh) to occur outside of the NLEB pup season of June 1 through July 31.[22]
- To protect the monarch butterfly, conduct vegetation management within the penstock and transmission line corridors between October 1 and April 30.
- To protect bald eagles at the project, prior to any construction, maintenance, or vegetation management activities, identify any existing eagle nests at the project by reviewing the Wisconsin Natural Heritage Inventory (NHI), establish a buffer zone of at least 660 feet between any nest and the project activity, and schedule any project activity that would be

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[21] Northern States does not specifically state that it is proposing a maximum elevation of 740.2 feet. However, in section 9 of Exhibit A, Northern States states that it may need to deviate from the "maximum" impoundment elevation and, if so, would follow the reporting requirements associated with a planned deviation. In addition, Northern States proposes to revise the project boundary upstream of the dam to follow a contour elevation of 740.2 feet, which is the normal impoundment surface elevation. In addition, Northern States states that it is proposing to operate the project in a manner that is consistent with current operation under the current license, which includes a normal surface elevation of 740.2 feet. *See* section 5.8.2 of Exhibit E of the application. *See also* section 2.1.4 and note 18 for additional information on the current license requirements and operation. Based on the information filed in the application, staff interprets Northern States' Proposed Action to include a maximum impoundment elevation of 740.2 feet.

[22] Northern States indicates that it would implement guidance from the FWS to protect NLEB and TCB, but Northern States does not identify any specific FWS guidance or measures.

within 660 feet of any eagle nests to occur outside of the eagle nesting season, i.e., between August 1 and January 15.[23]

- To help prevent the introduction and spread of invasive species, develop an invasive species management plan that includes provisions for conducting invasive species surveys every other year and removing or chemically treating any new invasive species.
- Continue to maintain the recreation access trail, scenic overlook, tailrace fishing site, parking area, and portable toilet, and maintain the new eastern take-out site.
- Continue releasing a minimum aesthetic flow of 8 cfs or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15, and continue releasing a minimum aesthetic flow of 20 cfs or inflow, whichever is less, to the bypassed reach from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period.
- To protect historic properties that are eligible for or listed on the National Register of Historic Places (National Register), develop a historic properties management plan (HPMP) in consultation with the Michigan State Historic Preservation Officer (Michigan SHPO), Wisconsin State Historic Preservation Officer (Wisconsin SHPO), and Tribes.

2.3 STAFF ALTERNATIVE

The Staff Alternative includes the following operational and environmental measures proposed by Northern States.

- Implement soil erosion and sediment control BMPs prior to any ground-disturbing activities.
- To protect aquatic resources, continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given time and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet.[24]
- To protect fish from impingement and entrainment, continue to maintain the existing trashrack with 1-inch clear bar spacing at the turbine intake.
- Notify the Commission and resource agencies of planned and unplanned deviations (e.g., impoundment drawdowns), and only modify project operation for short periods of time of up to 3 weeks, after mutual agreement with FWS, Michigan DNR, Michigan EGLE, and Wisconsin DNR.
- Develop an operation compliance monitoring plan to document compliance with project operation that includes the following provisions: (1) locations of headwater monitoring probes/gages; (2) frequency of monitoring; (3) procedures for maintaining and calibrating monitoring equipment; (4) standard operating procedures to be implemented outside of

[23] Northern States states that if it cannot avoid working within 660 feet of an eagle nest during the nesting season, it would consult with FWS and implement any agree-upon measures.

[24] *See supra* at note 21.

normal operating conditions, such as scheduled or emergency facility shutdowns or maintenance activities; (5) a schedule for installing and operating the monitoring equipment; and (6) notification procedures for planned and unplanned deviations.

- To protect the monarch butterfly, conduct vegetation management within the penstock and transmission line corridors between October 1 and April 30.
- To protect bald eagles at the project, prior to any construction, maintenance, or vegetation management activities, identify any existing eagle nests at the project by reviewing the Wisconsin NHI, establish a buffer zone of at least 660 feet between any nest and the project activity, and schedule any project activity that would be within 660 feet of any eagle nests to occur outside of the eagle nesting season, i.e., between August 1 and January 15.
- Continue to maintain the recreation access trail, scenic overlook, tailrace fishing site, parking area, and portable toilet, and maintain the new eastern take-out site.
- Continue releasing a minimum aesthetic flow of 8 cfs or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15, and continue releasing a minimum aesthetic flow of 20 cfs or inflow, whichever is less, to the bypassed reach from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period.

The Staff Alternative includes the following modifications to the applicant's proposal and additional staff-recommended measures.

- To protect the federally listed endangered NLEB, avoid the removal of non-hazardous trees that are 3 inches dbh or greater in diameter from April 15 through September 30, instead of Northern States' proposal to implement Wisconsin DNR's BITP/A and restrict the removal of trees greater than 3 inches dbh from June 1 through July 31.
- To enhance recreation at the project, develop a recreation management plan that contains the following provisions: (1) a description of all licensed project recreation facilities, including a map, and associated informational, safety, and Part 8 signage; (2) a description of operation and maintenance of the licensed project recreation facilities; and (3) a schedule for completing all required recreation improvements.
- To improve recreation access, include a map of the licensed project recreation facilities on Part 8 signage.
- To protect previously unidentified cultural resources that are discovered during project operation, maintenance, or other project-related work involving land-disturbing activities, stop all land-clearing and land-disturbing activities in the vicinity of the resources and consult with the Michigan SHPO, Wisconsin SHPO, and Tribes to determine the need for any cultural resource studies or measures.
- To protect cultural resources from any project modifications not specifically authorized by any new license, consult with the Michigan SHPO, Wisconsin SHPO, and Tribes prior to implementing such project modifications, to determine the effects of the activities and the need for any cultural resource studies or measures.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Certain alternatives to Northern States' proposal were considered but eliminated from further analysis because they are not reasonable in this case. These alternatives are presented in Appendix F, *Alternatives Considered but Eliminated from Detailed Analysis*.

3.0 ENVIRONMENTAL ANALYSIS

This section includes: (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.[25] Sections are organized by resource area (aquatics, terrestrial, recreation, etc.), with historic and current conditions described first. Current conditions are the baseline against which the environmental effects of the Proposed Action and alternatives are compared. Staff conclusions and recommendations are discussed in section 5.1, *Comprehensive Development and Recommended Alternative*, and in Appendix I, *Comprehensive Development.*[26]

3.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The project is located on the Montreal River in Gogebic County, Michigan, and Iron County, Wisconsin, approximately 0.4 mile upstream of the Montreal River's confluence with Lake Superior. The Montreal River Basin has a total drainage of 264 square miles, with nearly the entire basin located upstream of the project. The project is located 3.9 miles downstream of the Saxon Project and approximately 25 miles downstream of the Gile Project.

The Montreal River originates near Pine Lake in east-central Iron County, Wisconsin and flows for approximately 53 miles while descending approximately 1,000-feet in elevation. The West Fork of the Montreal River flows into the Montreal River approximately 18 miles upstream from Lake Superior and there are no other major tributaries in the basin.

Land in the vicinity of the project is mostly forested. The climate in the project area is characterized by cold, snowy winters and warm summers. January is the coldest month with an average low temperature of 3 degrees Fahrenheit (˚F), and July is the warmest month with an average high temperature of 77 ˚F. The average annual precipitation near the project is 36 inches with an average snowfall of approximately 166 inches.

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[25] Appendix A, *Glossary of Terms*, includes definitions of selected terms relating to the project, environment, and our analysis.

[26] Unless otherwise noted, the sources of our information are the license application filed by Northern States on December 30, 2022, and additional information filed by Northern States on August 28, 2023, November 14, 2023, December 21, 2023, January 5, 2024, May 24, 2024, August 29, 2024, November 7, 2024, and January 14, 2025.

3.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

A cumulative effect is the effect on the environment that results from the incremental effect of the action when added to the effects of other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant actions taking place over time, including hydropower and other land and water development activities.

Based on our review of the license application, as well as agency and public comments, we identified water quantity, water quality, aquatic habitat, fishery resources, and recreation as having the potential to be cumulatively affected by relicensing the project. We discuss cumulative effects on these resources in sections 3.3.2.3 and 3.3.5.3 of the EA.

3.2.1 Geographic Scope

Our geographic scope of analysis for cumulatively affected resources is defined by the physical limits or boundaries of: (1) the effects of the Proposed Action on resources, and (2) contributing effects from other hydropower and non-hydropower activities within the Montreal River Basin. We identified the geographic scope for water quantity, water quality, aquatic habitat, fishery resources, and recreation to include the Montreal River from the Gile Project, located on the West Fork of the Montreal River, to the Montreal River confluence with Lake Superior. We chose this geographic scope because the operation of the Superior Project, in combination with the Saxon and Gile Projects, may cumulatively affect flow, water quality, aquatic habitat, fishery resources, and recreation in this approximately 26-mile-long reach of the Montreal River.

3.2.2 Temporal Scope

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

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 issues.

Only the resources that have the potential to be affected are addressed in this EA. Based on this, Commission staff determined in SD2 that geology and soils, aquatic resources, terrestrial resources, threatened and endangered species, land use, recreation, and aesthetic resources, and cultural resources may be affected by the Proposed Action and action alternatives.

3.3.1 Geology and Soils

3.3.1.1 Affected Environment

Bedrock is exposed at the project upstream of the dam, along the impoundment shoreline, and downstream of the dam in the bypassed reach. Soil is thin to absent in areas around the dam and thickens with increasing distance away from the Montreal River. Soils in the project area range from poorly drained to well-drained with negligible to very high runoff potential. The impoundment shoreline is entirely undeveloped except for where the project facilities are located. The shoreline varies from steep to low-banked areas and is heavily vegetated with second-growth forest up to the water's edge, at which point it is heavily vegetated with aquatic plants.

In 2021, Northern States surveyed for erosion during an archaeological survey of the entire impoundment shoreline. Northern States documented that the impoundment shoreline is well-vegetated and did not identify any actively eroding sites. Northern States conducted another shoreline erosion survey during its annual wood duck nest box inspection in 2021. Northern States documented erosion along the riverbank at 3 sites upstream of the project impoundment and noted that no discernable changes in the extent of erosion have occurred over the last 5 years within or upstream of the impoundment.

3.3.1.2 Environmental Effects

Northern States proposes to continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given point in time and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet.

Northern States proposes to maintain the existing project facilities as part of any new license, except for the hand-carry boat take-out site and associated parking area on the western shoreline of the impoundment. Northern States proposes to construct a new hand-carry boat take-out site and parking area for six vehicles on the eastern shoreline of the impoundment. To reduce the potential for erosion and sedimentation associated with the construction of the parking area and any ground-disturbing activities related to project maintenance during the term of any new license, Northern States proposes to implement erosion and sediment control BMPs prior to any ground-disturbing activities. Northern States also proposes to conduct a shoreline erosion survey every 5 years to monitor erosion in the impoundment.

Our Analysis

Operating the project in run-of-river mode would continue to minimize impoundment fluctuations associated with project operation and thereby minimize project-induced shoreline erosion. Also, Northern States' proposal to survey the shoreline every 5 years would not provide benefits because monitoring alone would not benefit shoreline stability.

Northern States' proposal to establish a new hand-carry boat take-out site and associated parking area on the eastern shoreline of the impoundment would utilize an existing informal boat ramp that Northern States currently uses to launch motorized boats into the project impoundment. Thus, no significant ground-disturbing activity would occur along the shoreline to establish the new take-out site. Construction of the parking area could disturb a small area of mowed lawn to accommodate parking for six vehicles. Standard license article 19[27] provides that, in the construction, maintenance, and operation of the project, the licensee must take reasonable measures to prevent stream sedimentation and soil erosion on land adjacent to streams or other waters, which would protect aquatic and terrestrial resources. Northern States' proposal to implement erosion and sediment control BMPs prior to any ground-disturbing activities would provide similar benefits to standard article 19.

3.3.2 Aquatic Resources

3.3.2.1 Affected Environment

Water Resources

The median annual flow at the project is 186 cfs and median monthly flow at the project ranges from 101 cfs in September to 633 cfs in April (Table C-1). Michigan designates the Montreal River upstream of the impoundment and downstream of the dam as a coldwater stream, with a dissolved oxygen (DO) standard of 7.0 milligrams per liter (mg/L) and a temperature standard of 68 °F in July/August and 63 °F in September. Michigan designates the project's impoundment as a warmwater fishery with a DO standard of 5.0 mg/L and a temperature standard ranging from 83 °F in July to 74 °F in September.

Wisconsin classifies the Montreal River upstream and downstream of the project as Fish and Aquatic Life Waters, with a DO standard of 5.0 mg/L and a temperature standard ranging from 85 °F in July to 82 °F in September. Waters within the impoundment are subject to the standards for northern inland lakes and reservoirs, with a DO standard of 5.0 mg/L and a temperature standard ranging from 86 °F in July to 84 °F in September. Standards used to assess water quality at the project are presented in Table C-2.[28]

Northern States conducted a study from July 20 through September 14, 2021, to provide baseline data on water quality including vertical profiles of DO and temperature collected at four impoundment depths (surface, 3.3 feet, 6.6 feet and 8.5 feet). Northern States collected profile data on July 20, August 18, and September 14, 2021, and determined that the impoundment did

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[27] *See Standardized Conditions for Inclusion in Preliminary Permits and Licenses Issued Under Part I of the Fed. Power Act*, Order No. 540, 54 FPC 1792 (1975) (providing Form L-3, Article 19).

[28] *See* Northern States' December 30, 2022 Final License Application at Exhibit E, section 5.6, *Current Water Quality*, for a more detailed discussion of selected water quality standards.

not exhibit any substantial thermal or chemical stratification, with DO in the impoundment always greater than 6.1 mg/L.[29]

Northern States conducted another water quality study from July 13, 2023 to October 1, 2023, and recorded temperature and DO every 30 minutes in the Montreal River upstream of the impoundment, in the impoundment near the trashrack for the intake, and downstream of the powerhouse.[30] Average DO concentrations were 9.4 mg/L upstream of the impoundment, 8.5 mg/L near the intake, and 8.5 mg/L downstream of the project (Figure B-1). Average water temperature downstream of the powerhouse was only 0.1 °F higher than the average water temperature upstream of the impoundment (Figure B-2).

Fish and Aquatic Resources

The 16.3-acre impoundment has a maximum depth of 18 feet with an average depth of 4.8 feet. Habitat in the 1,900-foot-long bypassed reach is characterized by a steep gradient, bedrock substrate, and low habitat diversity. Downstream of the dam, the river flows through an approximately 0.3-mile reach of nearly continuous rapids leading to the approximately 90-foot drop at Superior Falls (American Whitewater, 2025). The lower reach of the Montreal River from the falls to Lake Superior is approximately 1,500 feet long. The river gradient decreases within the reach and Lake Superior backwaters much of the reach.

During an electrofishing survey conducted in 2021, Northern States collected 20 fish species (Table C-3).[31] One coldwater species, mottled sculpin, was collected in limited numbers. Game fish included black crappie, muskellunge, pumpkinseed, rock bass, smallmouth bass, walleye, and yellow perch. No trout were captured in the impoundment during electrofishing surveys. Michigan DNR and Wisconsin DNR stock the Montreal River, upstream of the project area, with trout. Specifically, Michigan DNR stocked 19,745 brown trout from 1979 to 2018 and Wisconsin DNR stocked 14,733 brook trout and 16,896 brown trout from 1972 to 2021.[32] Three redside dace, a Michigan endangered fish species, were collected upstream of the Wisconsin Highway 122 bridge crossing.

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[29] *See* Northern States' December 30, 2022 Final License Application at Exhibit E, Appendix E-24, Revised *Saxon Falls and Superior Falls Water Quality Study Report*.

[30] *See* Northern States' Water Quality Monitoring Study filed on December 21, 2023.

[31] *See* Northern States' December 30, 2022 Final License Application at Exhibit E, Appendix E-29, *Saxon Falls and Superior Falls Fisheries Study Report*.

[32] *See* Northern States' December 30, 2022 Final License Application at Exhibit E, Appendix E-28, *Montreal River Fish Stocking Data*.

Northern States conducted a Freshwater Mussel Study on August 25, 2021, upstream of the impoundment, within the impoundment, and downstream of the powerhouse.[33] No live mussels or dead shell were collected above the project dam. Northern States documented the following species in the Montreal River below the powerhouse: eastern elliptio, fatmucket, flutedshell, the state-listed endangered black sandshell, giant floater, and creeper.

During an Invasive Species Study conducted in 2021,[34] Northern States did not document any invasive aquatic animal species.

3.3.2.2 Environmental Effects

Water Resources and Aquatic Habitat

Northern States proposes to continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given time and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet. Northern States states that this operation mode would protect water quality and fish.

Interior and Michigan DNR recommend, under section 10(j) of the FPA, that the project continue to operate in a run-of-river mode to protect aquatic resources. River Alliance recommends that the project operate in run-of-river mode such that instantaneous inflow closely approximates project outflow to protect aquatic species. Michigan DNR also recommends, under section 10(j), Northern States' proposed impoundment elevations.

In its comments, Wisconsin DNR states that it plans to issue a certification that would require a water quality monitoring plan to ensure that dam operations are maintaining compliance with water quality standards and designated uses. Wisconsin DNR states that a water quality monitoring plan commonly requires data collection, reporting, and agency consultation. River Alliance recommends that Northern States develop, in consultation with resource agencies, a plan to monitor DO, water temperature, and other parameters deemed appropriate by Wisconsin and Michigan. River Alliance states that the plan should identify water quality criteria to ensure the project is operated within the States' criteria. River Alliance states that the water in the impoundment behind the dam could at times warm beyond the ambient river temperature, particularly in July, August, and September, which could decrease DO concentrations below the state standards and stress or kill fish, mussels, and other aquatic life. River Alliance indicates that its recommended plan would protect fish and other aquatic life from low dissolved oxygen levels and high water temperatures. Michigan HRC also recommends that Northern States monitor, among other things, water quality using state-of-the-art protocols and technologies like USGS gages.

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[33] *See* Northern States' December 30, 2022 Final License Application at Exhibit E, Appendix E-32, *Saxon Falls and Superior Falls Freshwater Mussel Survey Report*.

[34] See Northern States' December 30, 2022 Final License Application at Exhibit E, Appendix E-18, *Saxon Falls and Superior Falls ATIS Study Report*.

Our Analysis

As discussed in section 3.3.2.1, *Water Resources*, DO concentrations and temperatures in the impoundment and downstream of the powerhouse that were adequate to sustain aquatic life and always met Wisconsin's standards for warmwater fisheries. Average DO downstream of the powerhouse was 0.9 mg/L lower than DO upstream of the impoundment, but average daily DO was always greater than 7.0 mg/L. Water temperatures usually exceeded Michigan's standards for coldwater streams in July and August both upstream and downstream of the project. Although the impoundment is subjected to cycles of solar heating, average water temperatures downstream of the powerhouse were only 0.1 °F higher than average water temperature upstream of the impoundment, which would not affect habitat suitability for fish and other aquatic organisms. Continuing run-of-river operation would minimize the length of time water is retained in the impoundment and minimize the project's effects on DO and water temperature in the impoundment, which would continue to benefit water quality.

The project's run-of-river operation also maintains stable impoundment elevations that protect fish spawning areas from becoming dewatered. Continuing to operate the project in a run-of-river mode with an impoundment surface elevation of 739.7 to 740.2 feet, as proposed by Northern States and recommended by Michigan DNR, would not alter aquatic habitat in the impoundment or the Montreal River downstream of the project relative to current conditions for aquatic organisms, including fish, mussels, and macroinvertebrates.

Developing a water quality monitoring plan and monitoring water quality, as suggested by Wisconsin DNR and recommended by River Alliance and Michigan HRC, could provide information about temperature and DO concentrations during any new license term. However, the likelihood of any significant project-induced change in temperature or DO is low because the project would continue to operate in a run-of-river mode. Continuing run-of-river operation as proposed by Northern States would continue to minimize the length of time water is retained in the impoundment and help avoid increasing water temperatures in the impoundment from solar heating, which would continue to benefit water quality, fish, and benthic macroinvertebrates. River Alliance, Michigan HRC, and Wisconsin DNR did not provide any specific measures to enhance water quality, and monitoring itself would not provide any benefits to water quality during the term of a license.

Minimum Flows

Northern States proposes to continue to release a minimum aesthetic flow of 8 cfs or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15. Northern States also proposes to continue the minimum aesthetic flow of 20 cfs or inflow, whichever is less, to the bypassed reach from 8:00 am to 8:00 pm on weekends and holidays during the same period.

River Alliance recommends that Northern States release a continuous minimum flow of 2 cfs to the bypassed reach year-round, in addition to seasonal aesthetic flows, to sustain aquatic life.

Our Analysis

Aquatic habitat in the bypassed reach is limited by a lack of diversity (i.e., mostly bedrock), steep gradient, and natural barriers to fish movement. Current and proposed minimum flows would maintain existing conditions and continue to provide seasonal aquatic habitat from late May through mid-October for macroinvertebrates and any fish that reach the bypassed reach from the impoundment.

As proposed, the upper bypassed reach (i.e., from the dam to the base of Superior Falls) would continue to be dry from October 16 through late May, and would not support aquatic resources. The lower bypassed reach, from the base of Superior Falls to the tailrace, is backwatered by Lake Superior. Because the bypassed reach includes limited habitat, as discussed above, this additional dry period would not significantly affect aquatic resources (e.g., fish and macroinvertebrate populations).

A year-round flow of 2 cfs, as recommended by River Alliance, would provide year-round flow that could provide marginal aquatic habitat in the bypassed reach, including from mid-October through late May, when water would not be provided by the No-Action Alternative and Proposed Action, as detailed above. Therefore, a year-round flow of 2 cfs could improve habitat in the bypassed reach for some fish and macroinvertebrates relative to the No-Action Alternative and Proposed Action. However, it is unlikely that a year-round minimum flow of 2 cfs would provide any significant benefit to habitat or biota in the bypassed reach, considering the cold temperatures that occur during this time period in northern Wisconsin/Michigan and the lack of substrate diversity, steep gradient, and segmented habitat in the bypassed reach.

Operation Compliance

To protect aquatic resources, Northern States proposes to continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given time and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet. Northern States also proposed to continue releasing a minimum aesthetic flow of 8 cfs into the bypassed reach from the Saturday before Memorial Day through October 15 and release a minimum aesthetic flow of 20 cfs into the bypassed reach from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period.

The current license requires Northern States to implement a plan to monitor compliance with run-of-river operation that includes maintaining a staff gage and a recording gage in the impoundment; and maintaining records of water level, inflow, and outflow at the project. Northern States currently maintains hourly records of impoundment elevation, turbine output, and calculated flow through the project.

Northern States proposes to develop an operation compliance monitoring plan to document compliance with the operational requirements of any license, including impoundment elevation and minimum flow requirements. Northern States proposes to include the following provisions in the plan: (1) locations of headwater monitoring probes/gages; (2) frequency of monitoring; (3) procedures for maintaining and calibrating monitoring equipment; (4) standard operating procedures to be implemented outside of normal operating conditions, such as scheduled or emergency facility shutdowns or maintenance activities; (5) a schedule for installing and operating the monitoring equipment; and (6) notification procedures for planned and unplanned deviations.

Interior recommends, under section 10(j), that Northern States develop an operation compliance monitoring plan that includes the following provisions: (1) mechanisms for documenting inflow and outflow from the project; (2) installation of staff gages that show the operating band of the impoundment; (3) installation of automatic water level recorders for impoundment and tailrace elevations; and (4) recording daily turbine operation, impoundment and tailrace elevations, and flow releases through the powerhouse and spillway. Interior states that these measures are intended to demonstrate compliance with project operation requirements. Interior states that compliance with run-of-river operation and other operating measures is necessary at all times to provide suitable living conditions for fish and wildlife, and to protect the habitats upon which they depend (e.g., spawning areas).

Michigan DNR recommends, under section 10(j), that Northern States develop an operation compliance monitoring plan that includes the following provisions: (1) continuously collect flow data at 15-minute intervals, including inflow to the project and flow downstream of the project, consistent with the United States Geological Survey's (USGS) data standards; (2) installation of automatic water level recorders in the impoundment for monitoring and instantaneous reporting of impoundment elevations; (3) a description of the locations of the impoundment gages and frequency of monitoring; (4) recording and reporting of operation parameters (e.g., flows through units, gate opening, and project shutdowns); (5) a description of the maximum and minimum flows that can be safely passed through the penstocks and turbines; (6) measures for avoidance, minimization, and mitigation of drawdowns; (7) staff gages visible to the public; (8) standard operating procedures for facility shutdown or maintenance; (9) ramping procedures for reestablishing flows and restoring flows after deviations from run-of-river operation; (10) calibration standards for equipment and discharge rating curves for project structures (e.g., spillways, gates), including procedures for periodically updating calibration standards and rating curves; (11) procedures for notifying and reporting deviations to resource agencies and the Commission; (12) a description of minimum flows, aesthetic and scenic flows, and bypassed reach flows; (13) a description of recreational flows and scheduled releases; (14) procedures for ice management; and (15) a description of planned maintenance, redundancy, and alarms. Michigan DNR indicates that its recommended measures are needed to ensure compliance with the operational requirements of the project. Michigan DNR states that alteration of minimum flows and impoundment elevations could affect water temperatures, wetlands, and aquatic habitat, and aquatic organisms.

Michigan DNR also recommends, under section 10(j), that any license include an approximate longitudinal profile along the Montreal River that describes the elevations of the impoundment, spillway, sill, tailrace, and the confluence with Lake Superior. Michigan DNR states that longitudinal profiles would be useful for understanding the effects of project operation on aquatic resources, project compliance, and understanding conditions that may occur over the course of the license for which consultation may be warranted.

Michigan DNR also recommends, under section 10(j), that Northern States provide USGS-quality continuous data with a platform for real-time reporting that allows data search, report development, and comparison to nearby gages. Michigan DNR states that real-time searchable data is critical for understanding how local conditions are influencing project operation.

Michigan EGLE recommends that Northern States: (1) fund a USGS gage upstream of the impoundment or provide a similar flow gaging site with real-time, remotely accessible data; and (2) provide the calculated outflows through each release point at the project with similar quality and frequency as a USGS gage. Michigan EGLE states that the gage would measure inflows to the impoundment and allow for better compliance with run-of-river operation in combination with monitoring headpond levels and recording gate operations.

In its comments, Wisconsin DNR states that it plans to issue a Clean Water Act section 401(a)(1) water quality certification (certification) that would require an operations plan that includes processes and operations to manage drawdown cycles at Gile Flowage and ensures operational compliance with water levels and flows. Wisconsin DNR states that an operation plan commonly includes methods to document water levels and flows, deviation reporting, low flow/high flow contingency, emergency management, etc.

To ensure compliance with the operational requirements of any new license, River Alliance recommends that Northern States develop an operation compliance monitoring plan that includes provisions for: (1) daily inflow and discharge information; (2) the daily range of impoundment fluctuations; and (3) installation of a USGS gage to ensure accurate data collection. Michigan HRC recommends that Northern States monitor flows, impoundment elevations, and water quality using state-of-the-art protocols and technologies like USGS gages.

Our Analysis

Although compliance measures do not directly affect environmental resources, they do assist the Commission with verifying that a licensee is complying with the environmental requirements of a license. Northern States' proposed operation compliance monitoring plan would help it document compliance with the operational requirements of any license for the project and provide a mechanism for reporting deviations. The proposed plan would also help the Commission verify that Northern States is operating the project in run-of-river mode; maintaining the impoundment elevation between a minimum of 739.7 feet and a maximum of 740.2 feet; and releasing minimum aesthetic flows into the bypassed reach, thereby facilitating administration of the license and avoiding misunderstandings.

Northern States proposes to develop an operation compliance monitoring plan to document compliance with minimum flow requirements, among other things, so the plan would include a description of minimum flows as recommended by Michigan DNR. In addition, the following recommendations from Michigan DNR are included in Northern States proposal to develop an operation compliance monitoring plan: describing the locations of the impoundment gages and frequency of monitoring; recording and reporting project shutdowns; standard operating procedures for facility shutdowns and maintenance; calibration standards for equipment and procedures for periodically updating calibration standards; and notifying and reporting deviations to resource agencies and the Commission.

Northern States proposes to develop standard operating procedures to be implemented outside of normal operating conditions, such as scheduled or emergency facility shutdowns or maintenance activities. Michigan DNR specifies additional procedures that should be implemented outside of normal operating conditions, including: (1) ramping procedures for reestablishing flows and restoring flows after deviations from run-of-river operation; (2) procedures for ice management; and (3) a description of planned maintenance, redundancy, and alarms. Developing standard operating procedures as proposed by Northern States and recommended by Michigan DNR, would ensure that procedures are in place for occasions when the project is not operating normally, and could help the project return to compliance with the operational requirements of any license, including run-of-river mode operation, impoundment elevation requirements, and minimum flow requirements. The specific operating procedures would be developed in consultation with resource agencies.

Northern States maintains a publicly visible staff gage that displays the impoundment elevation.[35] Because Northern States already maintains a staff gage at the project that shows the operating band of the impoundment, Michigan DNR's recommendation to include provisions for staff gages that are visible to the public and Interior's recommendation to install staff gages that show the operating band of the impoundment, are not necessary to determine compliance with any proposed or recommended operating requirements and would not provide a compliance benefit.

Stakeholder recommendations to develop an operation compliance monitoring plan with provisions for documenting inflow and outflow from the project, would provide mechanisms for ensuring compliance with run-of-river operation, impoundment elevations, and minimum flow releases, including: (1) Interior's, Michigan DNR's, Michigan EGLE's, Michigan HRC's, and River Alliance's recommendations to install flow and impoundment water level monitoring equipment, including USGS gages; (2) Michigan DNR's recommendation to provide discharge rating curves for project structures and Michigan EGLE's recommendation to provide calculated outflows through each release point; (3) Interior's and Michigan DNR's recommendation to record daily turbine operation, impoundment and tailrace elevations, and flow releases; and (4) Michigan DNR's and EGLE's recommendation to provide continuous USGS-quality data. However, Northern States currently monitors the impoundment elevation with an automatic water level recorder, maintains a publicly visible staff gage that displays the impoundment elevation, and documents flow through the project based on gate openings and turbine discharges at hourly intervals. Northern States maintains hourly records of reservoir elevation, turbine output, and calculated flow through the project. These records have been sufficient to verify compliance with the operational requirements of the project under the current license and there is no known history of any non-compliance events that have resulted in environmental effects during the term of the current license. Therefore, it is unclear how these recommendations would provide a significant benefit for maintaining compliance with any proposed or recommended operating requirements.

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[35] *See* Commission staff's *Environmental Inspection Report* issued on August 4, 2017.

Michigan DNR generally recommends that Northern States' proposed operation compliance monitoring plan include provisions for the avoidance, minimization, and mitigation of drawdowns. Michigan DNR does not include any specific measures. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits of including provisions for the avoidance, minimization, and mitigation of drawdowns. The discussion below in Project Maintenance and Emergencies includes an analysis of the environmental effects of impoundment drawdowns and an analysis of proposed and recommended measures pertaining to impoundment drawdowns

Michigan DNR's recommendation to describe the safe hydraulic capacities of penstocks and generating units is not necessary to determine compliance with any proposed or recommended operating requirements and would not provide a compliance benefit. However, any new license would either approve or revise Exhibit A, which specifies that the project's hydraulic capacities.[36]

Michigan DNR states that its recommendation for a longitudinal profile of the Montreal River would be useful for understanding the effects of project operation on aquatic resources, project compliance, and understanding conditions that may occur over the course of the license for which consultation may be warranted. However, Michigan DNR does not explain how this information could be used to evaluate project compliance with any operational requirements or provide environmental benefits. As discussed above, monitoring water levels in the impoundment and documenting project outflows, as proposed by Northern States, would provide the information necessary to determine compliance with the operational requirements of any license.

Wisconsin DNR's comment about an operations plan does not include any specific measures. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits of an operations plan.

Project Maintenance and Emergencies

The current license requires Northern States to limit non-emergency impoundment drawdown rates to a maximum of 1 foot per 24 hours for the first 48 hours and 0.5 foot per 24 hours thereafter.

Northern States is not proposing any impoundment drawdowns during the term of any license but states that drawdowns will likely be necessary for project maintenance or emergencies during the term of any new license. Northern States proposes to: (1) notify the Commission and resource agencies of any planned and unplanned deviations, including impoundment drawdowns; and (2) only modify project operation for short periods of time, of up to 3 weeks, after mutual agreement with Interior, Michigan DNR, Michigan EGLE, and Wisconsin DNR. For planned deviations exceeding 3 weeks, Northern States intends to file, for Commission approval, an application for a temporary amendment of license that would include a drawdown plan developed in consultation with resource agencies. Northern States would also

[36] For example, see section 5.1 of Exhibit A of the license application.

file a report with the Commission after any unplanned deviations required by operating emergencies beyond its control.

Michigan DNR states that drawdowns can be highly destructive to aquatic resources, especially to herpetofauna and freshwater mussels during the cold season and to aquatic resources in general when frequent, untimely, and extensive drawdowns result in dam from sedimentation and degradation. Michigan DNR recommends, under section 10(j), that Northern States: (1) avoid drawdowns of the impoundment in the winter and spawning periods (between September 15 and June 1), and use alternatives to drawdowns (e.g., coffer dams) when possible; (2) minimize the duration, rate, and extent of any drawdowns; (3) mitigate the effects of drawdowns, including by surveying and relocating stranded organisms and preventing/managing excessive erosion and sedimentation; and (4) consult with Michigan DNR for any deviation from these measures.

Michigan EGLE states that drawdowns degrade impoundment and downstream water quality. Michigan EGLE recommends that Northern States develop a drawdown plan in consultation with Michigan DNR that includes measures to avoid, minimize, and mitigate the effects of any drawdowns, such as through organism stranding and relocation efforts. Michigan EGLE states that the measures will help protect water quality, designated uses, and aquatic life.

To protect small fish, mussels, and other aquatic life from becoming stranded in the riverbed and exposed on dewatered riverbeds, River Alliance recommends that Northern States develop, in consultation with resource agencies, a drawdown management plan for drawdowns associated with routine maintenance and emergencies. River Alliance states that maintenance drawdowns can cause adverse impacts to aquatic resources, especially mussels.

Michigan DNR recommends, under section 10(j), that Northern States develop a conservation and protection plan for mussels.[37] Michigan DNR states that the existence and operation of the project negatively affect mussels and other freshwater species and that the plan could include measures such as surveying and relocating mussels prior to construction and repair activities (e.g., spillway inspections, penstock footing replacements, and wingwall repairs).

In its reply comments, Northern States states that it supports the development of a drawdown plan to protect mussels during planned and unplanned drawdowns that are less than 3 weeks in duration, including the following provisions: (1) drawdown and refill rates; (2) measures for stranded organisms (such as fish and mussels); (3) scheduling non-emergency drawdowns during periods that minimize adverse effects on aquatic species, including during the fish spawning season, if possible; and (4) provisions for consultation with resource agencies 90 days prior to any planned drawdowns and reporting emergency drawdowns to the Commission and resources agencies within 24 hours of the emergency.

[37] Michigan DNR's recommendations regarding birds, herpetofauna, and bats are discussed in section 3.3.3.2, *Sensitive Species Protection*.

Our Analysis

Impoundment drawdowns for maintenance and emergencies can be brief or last for several weeks (or longer) and can involve a rapid dewatering of the impoundment. Dewatering aquatic habitat during a drawdown can impact the breeding, feeding, and sheltering of aquatic organisms. Freshwater mussels, given their limited mobility, may be particularly vulnerable to water level drawdowns that exceed their ability to move and can result in stranding, desiccation, and mortality. Drawdowns can also mobilize sediment in an impoundment because water velocity and turbulence along the riverbed increases as water level decreases, thereby resuspending and transporting sediments downstream. Refill of a reservoir after a drawdown could also limit downstream flows, as inflow to the project would need to be stored for refill purposes. Accordingly, the procedures used to draw down and refill an impoundment can significantly affect aquatic habitat and organisms in the impoundment and downstream of the project.

Northern States does not conduct routine drawdowns at the project. Based on our review of the project record, the most recent drawdown was a complete drawdown of the impoundment from July to December 1999 to facilitate the installation of a new Tainter gate and other repairs.[38] For this drawdown, Northern States developed and implemented a specific drawdown plan in consultation with resource agencies, as approved by the Commission, that included measures to minimize effects of erosion, relocate stranded organisms, and protect any cultural resources.[39] As discussed in section 3.3.2.1, *Fish and Aquatic Resources*, Northern States did not document any mussels in the impoundment during a survey conducted in 2021, but identified several species below the powerhouse. The effects of any planned or unplanned drawdown on fish, mussels, and other resources within and downstream of the impoundment depend on the seasonal timing, magnitude, duration, drawdown and refill rates, and flow releases downstream of the project. Northern States' proposal to only modify project operation for short periods of time, of up to 3 weeks, after mutual agreement with Interior, Michigan DNR, Michigan EGLE, and Wisconsin DNR and file an application for a temporary amendment of license for planned deviations exceeding 3 weeks, is similar to the current procedures for managing drawdowns such that specific measures would be developed in consultation with resource agencies for each planned drawdown. Obtaining agreement from the resource agencies on the planned drawdown (e.g., timing, duration, and environmental measures) prior to any planned drawdowns of up to 3 weeks would help protect aquatic resources. For any planned drawdown lasting 3 weeks or more, Northern States' proposal to file an application for a temporary amendment of the license would ensure that the Commission and resource agencies could consider the need for and effects of the proposed actions at that time. Finally, although resource agency consultation would not be possible in the event of an emergency that requires an immediate drawdown (e.g., dam failure), Northern States' proposal to file a report following the unplanned deviation, including documentation of any observed or reported environmental effects, a description of measures implemented to prevent similar deviations in the future, and any comments or correspondence received from the resource agencies, would help mitigate any adverse effects after the deviation.

[38] *See* Northern States' final construction report filed on February 18, 2000.

[39] *Northern States Power Company*, 87 FERC ¶ 62,207 (1999).

Michigan DNR's recommended measures for drawdowns are general in nature, except for the recommendation to avoid drawdowns of the impoundment in the winter and spawning periods (between September 15 and June 1). Avoiding drawdowns during this time period would protect fish nests/eggs from dewatering and would protect herpetofauna (e.g., turtles) from freezing in the winter. However, Northern States cannot avoid all drawdowns (e.g., emergency drawdowns) or completely prohibit drawdowns during all fish spawning periods or from September 15 to June 1 because other factors, such as Northern States' ability to safely operate the project, must be considered. For example, dam or gate repairs could require Northern States to conduct maintenance between September 15 and June 1. Northern States' proposal to obtain mutual agreement from resource agencies prior to planned deviations would provide Michigan DNR and other resource agencies the opportunity to consult on any specific drawdown plans and environmental measures prior to any planned drawdown. Therefore, Michigan DNR's recommended measures would provide little to no benefit relative to Northern States' proposal.

Michigan EGLE's and River Alliance's recommendations to develop a drawdown plan for all drawdowns do not include any specific measures. Although Michigan EGLE mentions organism stranding and relocation efforts, it does not describe any specific efforts, such as the conditions under which surveying would be needed and where/how relocation would occur. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits of including provisions for the avoidance, minimization, and mitigation of drawdowns.

Michigan DNR's recommendation to develop a mussel protection plan does not identify any specific measures. Although Michigan DNR mentions surveying and relocating mussels prior to construction and repairs, it does not describe any specific efforts, such as when surveying would be necessary (e.g., all drawdowns or only drawdowns below certain depths) and procedures for relocating mussels. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits of a mussel protection plan.

Fish Impingement and Entrainment

Northern States proposes to continue to maintain the existing trashrack with 1-inch clear bar spacing at the intake. Interior recommends, under section 10(j), that Northern States install trashracks above the intake that are designed to safely manage velocities and small enough to minimize juvenile fish entrainment. Michigan DNR recommends, under section 10(j), that Northern States maintain trashracks to minimize fish entrainment and turbine mortality such that average normal inflow velocities immediately upstream of the trashracks are no greater than 2 feet per second (fps).

Our Analysis

As discussed in section 3.3.2.1, *Fish and Aquatic Resources*, the project impoundment supports a fish community of at least 20 species with white sucker, common shiner, and hornyhead chub comprising 81% of all fish captured. These species utilize a variety of lotic and lentic habitats available in the project impoundment and the upstream reach of the Montreal River, and do not require downstream passage from the impoundment to complete their life history requirements. Although fish in the impoundment do not require downstream passage, fish could still encounter the project intake when foraging or seeking new habitat in the impoundment. Water intake structures can injure or kill fish that encounter intake screens/trashracks. At hydropower projects, fish that pass through the intake(s) are also subject to potential turbine injury/mortality.

Fish that are wider than the clear spacing between the trashrack bars, and/or have burst swim speeds lower than approach velocities can become trapped against intake screens or bars of a trashrack. This process is known as impingement and can cause physical stress, suffocation, and death of some organisms (EPRI, 2003). Entrainment into the intake structure occurs if fish are small enough to pass between trashrack bars but are (a) unable to overcome the approach velocity or (b) choose to pass downstream through the trashrack. If entrainment occurs, injury or mortality can result from collisions with turbine blades, exposure to pressure changes, shear forces in turbulent flows, or water velocity accelerations created by turbines (Rochester et. al., 1984). Fish that are entrained and killed are removed from the river population and no longer available for recruitment to the fishery.

The likelihood of a fish becoming impinged rather than entrained is a function of the spacing between the bars on an intake structure, as well as the size and body shape of fish. The project includes a trashrack with 1-inch clear bar spacing at the turbine intake. The calculated approach velocity at the trashrack is 0.83 feet per second (fps). Staff used proportional measurements (length/width) for white sucker, common shiner, and hornyhead chub as reported by Smith (1985) to estimate the length of fish that would be physically excluded by the trashrack.[40] Staff chose these species because they are the dominant species found in the project impoundment. Based on the proportional estimates, white sucker, common shiner, and hornyhead chub would have to be 6.8, 9.3, and 7.8 inches long, respectively, to be physically excluded from the turbines by the trashrack that has 1-inch clear bar spacing. However, common shiner and hornyhead chub do not grow to a length of 9.3 and 7.8 inches, respectively. Also, a 6.8-inch-long white sucker has a burst swim speed of 2.6 fps, which exceeds the highest calculated intake velocity of 0.83 fps at the trashrack (Katopodis and Gervais, 2016). Therefore, there is no risk of white sucker, common shiner, or hornyhead chub being impinged at the project.

Even if fish are small enough to fit through trashrack bars, they are likely to behaviorally avoid entrainment if their burst swim speed is greater than the water velocity at the intake (Knapp et al., 1982). Fish are able to detect obstacles using stimuli such as flow acceleration, turbulence, and sound (Coutant and Whitney, 2000). As fish approach the intake and the trashrack, they sense flow acceleration near the trashrack and would typically respond by swimming away from the intake at burst speed. Juveniles approximately 2 inches long or longer, for all three species, have burst swim speeds faster than the 0.83-fps calculated approach velocity at the trashrack. Therefore, juveniles would be able to avoid entrainment by swimming away.

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[40] Staff used proportional measurements to calculate a scaling factor of body width to total length (scaling factor = width/total length), and then used the scaling factor to estimate the length that would be physically excluded by the 1-inch trashrack. For white sucker, common shiner, and hornyhead chub, we used scaling factors of 0.1460, 0.1072 and 0.1277, respectively.

Consistent with Michigan DNR's recommendation, continuing to maintain the current trashrack, as proposed by Northern States, would ensure that inflow velocities are less than 2 fps. Interior's recommendation to install trashracks that would provide safe approach velocities and minimize juvenile fish entrainment lacks any specific measures. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits of this recommendation. However, based on our analysis above, the current trashrack would minimize juvenile fish entrainment and maintain approach velocities no greater than 0.83 fps.

Although most fish would behaviorally avoid entrainment, small fish could choose to pass downstream through the trashrack and be injured or killed. Winchell et al. (2000) found that projects with radial-type (e.g., Francis) turbines, such as the turbines at the Superior Project,[41] typically have entrainment survival rates between 60 to 70% for fish that are 8 inches or less.[42] Therefore, while some small fish within the impoundment may be susceptible to entrainment at the project, the survival of these fish is expected to be high because they are less prone to mechanical injury from turbine passage than larger fish. Additionally, some fish would pass downstream of the dam through the minimum flow pipe and Tainter gates when spill occurs. Survival of fish passing through the minimum flow pipe and the Tainter gates should be higher because these fish are not subject to mechanical injury from the turbines. No fish kills downstream of the powerhouse have been reported in the project record or noted by the resource agencies.

In summary, most fish species in the impoundment have burst swim speeds that exceed the approach velocity and would be able to behaviorally avoid impingement and entrainment at the project. Based on the low potential for entrainment and expected survival rate for any fish that are entrained through turbines, continuing to operate the project and maintain the current trashrack would continue to protect resident fish populations in the project area.

3.3.2.3 Cumulative Effects on Aquatic Resources

As discussed in section 3.1, *General Description of the River Basin*, the project is located 3.9 miles downstream of the Saxon Project,[43] approximately 25 miles downstream of the Gile

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[41] The project's powerhouse has two horizontal Francis turbine-generators, each with a maximum rotational speed of 600 revolutions per minute (rpm). Winchell et al. (2000) evaluated Francis turbines with hydraulic capacities of 275 to 695 cfs and rotational speeds of greater than 250 rpm.

[42] The maximum hydraulic capacity of each unit (110 cfs) is less than the range evaluated in Winchell et al. 2000 (275 to 695 cfs). Thus, survival rate for fish passing through the turbines could be lower because the potential for blade-strike mortality is likely higher for the project's turbines relative to those evaluated in Winchell et al. 2000.

[43] The EA for the Saxon Project, issued concurrently with this EA, addresses the effects of relicensing the Saxon Project and the potential cumulative effects of the Saxon Project with relicensing the Superior Project and licensing the Gile Project.

Project,[44] and approximately 0.4 miles upstream of Lake Superior. The Gile Project was constructed in 1940 and has operated in a seasonal store-and-release mode to augment generation at the Saxon and Superior Projects since operation began in 1941. The water released (up to approximately 200 cfs), when combined with the flow in the mainstem of the Montreal River, allows Northern States to maximize generation and avoid spilling water over the spillway or through the gates at the downstream projects. The Gile Project has altered the natural flow pattern downstream of the Gile Project by storing flow associated with spring runoff and other high flow events while releasing additional flow during low flow periods in the summer and winter.

In the license application for the Gile Project, Northern States proposes to: (1) continue operating the project as a water storage facility and maintain the reservoir from a minimum elevation of 1,475 feet to a maximum elevation of 1,490 feet, with annual summer and winter drawdowns to augment flows for hydroelectric generation at the Saxon and Superior Projects; (2) limit drawdowns of the Gile Project's reservoir to 0.2 foot per day during normal operating conditions; and (3) release a minimum flow of 10 cfs to the West Fork downstream of the Gile Project. Northern States also proposes two whitewater flow releases per year, on a day in June and a day in September, from the Gile Project's dam to provide whitewater boating opportunities in the West Fork. Each proposed release would be 1,200 cfs for 3 hours, with flow ramping 1 hour before and after each whitewater release.

The Saxon and Superior Projects would continue to operate in run-of-river mode and pass any flow releases from the Gile Project; thus, continued run-of-river operation at the Saxon and Superior Projects would not contribute to cumulative effects on flow in the Montreal River Basin.

Northern States' recent water quality study at the Gile Project indicates that DO and water temperature are suitable for fish and other aquatic life. Continuing to operate the project in a store-and-release mode would not substantially alter water quality conditions downstream of the project. Any effects would mostly attenuate as water mixes with the Montreal River and flows for a total of 21 miles before reaching the Saxon Project.

As discussed above in section 3.2.2.2, *Water Resources and Aquatic Habitat*, Northern States' 2023 water quality study indicates that the Superior Project does not substantially affect DO concentrations and temperatures. Continuing to operate the project in run-of-river mode would minimize the length of time water is retained in the impoundment and minimize the project's effects on DO and water temperature. The Saxon Project also operates in run-of-river mode and Northern States observed similar minor effects on DO and temperature at the Saxon Project. Therefore, relicensing the Superior Project as proposed would not add to any cumulative effects on water quality in the Montreal River Basin.

Construction of the Gile, Saxon, and Superior Projects collectively altered approximately 7.5 miles of mainstem riverine habitat to lentic habitat in the early 20th century. Despite seasonal

[44] The source of information for the Gile Project is the license application filed on August 18, 2023, and additional information filed by Northern States on September 26, 2023, December 18, 2023, and November 7, 2024.

drawdowns that dewater aquatic habitats and adversely affect aquatic organisms, the Gile Project's reservoir currently supports a diverse fish community and some mussels. Continuing to limit the drawdown rate to no more than 0.2 foot per day would continue to protect fish and mussels from stranding and desiccation during the seasonal drawdowns. Continuing to release a minimum flow of 10 cfs from the Gile Project would also help provide adequate habitat for aquatic organisms downstream of the dam.

As discussed in section 3.3.2.2, *Water Resources and Aquatic Habitat*, the Superior Project would continue to operate in run-of-river mode, which helps maintain stable water levels in the impoundment and protects fish spawning areas from being dewatered. As discussed in section 3.3.2.2, *Minimum Flows*, Northern States proposes to continue releasing minimum aesthetic flows into the bypassed reach that provide seasonal aquatic habitat from late May through mid-October for macroinvertebrates and any fish from the impoundment. The Saxon Project would also continue to operate in run-of-river mode which would similarly protect aquatic habitat and organisms. Accordingly, continuing to operate the Superior Project as proposed would not add to cumulative effects on aquatic habitat and organisms in the Montreal River Basin.

3.3.3 Terrestrial Resources

3.3.3.1 Affected Environment

Northern States characterized terrestrial habitat along the shoreline during the Invasive Species Study conducted in 2021. Terrestrial habitats include a heavily forested shoreline and scrub/shrub areas. In addition, approximately 72.6 acres of forested/shrub wetlands occur in the project boundary under the current license. The state-listed threatened broad-leaved twayblade and Braun's holly-fern may occur in the project vicinity. Braun's holly-fern is a Wisconsin threatened plant found in rich hardwood or mixed hardwood-conifer forests near ravine bottoms, as well as in areas of cold air drainage, on gentle to moderately steep rocky forested slopes, and at the bases of moist cliffs. Broad-leaved twayblade is found on seepage slopes and ravine bottoms in hardwoods or mixed forests.

The project area supports a variety of large mammals including wide-ranging species such as the federally listed endangered gray wolf and threatened Canda lynx, and other mammals such as river otter, deer, and bats, including the federally listed endangered northern long-eared bat. A variety of herpetofauna occur in the project vicinity, including frogs, salamanders, snakes, and turtles. Similarly, a variety of bird species occur in the project vicinity, including the federally listed endangered piping plover and threatened rufa red knot. Raptor species such as bald eagle, also occur in the project vicinity. A bald eagle nest has been documented in the project vicinity.

The Invasive Species Study identified small populations of the following invasive plant species at the project: purple loosestrife, narrowleaf/hybrid cattail, spotted knapweed, yellow iris, aquatic forget-me-not, Canada thistle, tansy, common and glossy buckthorn, and wild parsnip.

3.3.3.2 Environmental Effects

Project Operation and Maintenance

To protect riparian vegetation above and below the project, Northern States proposes to continue operating the project in a run-of-river mode. As part of its proposal to continue maintaining project facilities, Northern States would continue to grade the parking area, mow lawns, trim encroaching vegetation, and remove hazardous trees as needed to maintain project facilities and access to project recreation areas. Northern States also proposes to construct a new hand-carry boat take-out site and gravel parking area for six vehicles on the eastern shoreline of the impoundment and discontinue maintenance of the existing hand-carry boat take-out site and associated parking area on the western shoreline of the impoundment.

To protect bald eagles at the project, Northern States proposes to implement the following measures prior to any construction, maintenance, or vegetation management activities: identify any existing eagle nests at the project by reviewing the Wisconsin NHI, establish a buffer zone of at least 660 feet between any nest and the project activity, and schedule any project activity that would be within 660 feet of any eagle nests to occur outside of the eagle nesting season, i.e., between August 1 and January 15. Northern States is not proposing to continue maintaining the four wood duck boxes required under the current license. Northern States explains that there is adequate wood duck nesting habitat in the project vicinity.

Michigan DNR recommends, under section 10(j), that any license issued by the Commission include provisions to protect migratory birds, herpetofauna, bats, and bat roosting areas. In its comments, Wisconsin DNR states that several species could be impacted by dam operation, drawdowns, and repairs. Wisconsin DNR also states that it plans to issue a certification that would require various management plans and that management of state-listed species could occur through various processes including specific management plans for state-listed species. River Alliance recommends that Northern States develop a plan to protect bald eagles, ospreys, and their nests from land-disturbing activities, since these species are protected by the Migratory Bird Treaty Act.

Michigan DNR recommends, under section 10(j), that Northern States develop a land management plan with provisions to maintain and protect the project's aquatic and terrestrial habitats. Michigan DNR explains that a land management plan would provide a method to ensure that species and their habitats are adequately considered by licensee activities at the project, including the protection and management of rare, sensitive, and invasive species, and changes to rare and sensitive species that could be considered through annual meetings that are part of the plan. Michigan EGLE and Michigan HRC also recommend the development of a land management plan that includes measures to protect natural resources associated with the lands in the currently licensed project boundary. River Alliance recommends that any license requires Northern States to establish a 200-foot-wide, no-cut buffer within the project boundary. River Alliance states that a buffer would protect old growth timber, wildlife habitat, and water quality.

Our Analysis

Current project operation is not adversely affecting wildlife or terrestrial habitat, and there are no anticipated changes in project operation that would materially impact wildlife or terrestrial habitat.[45] By continuing to operate the project in a run-of-river mode, terrestrial habitat along the impoundment shoreline and tailrace would be substantively unchanged relative to current conditions. Continuing run-of-river operation would minimize the degree of water level fluctuations in the impoundment and any associated shoreline erosion, and result in a downstream flow regime that is similar in magnitude and timing to natural river flows, thereby minimizing project effects on wetland and riparian habitat for wildlife. Continuing to maintain project access roads and parking areas, mow lawns, trim vegetation, and remove hazard trees to maintain project access would not significantly affect terrestrial habitat or wildlife.

Construction of the new parking area would permanently convert a mowed lawn area into a new gravel parking area large enough for six vehicles. Northern States would not significantly disturb vegetation or soils along the impoundment shoreline, and construction of the parking area would not affect any wildlife or terrestrial habitat since the area currently consists of a mowed lawn. Northern States would no longer maintain the existing boat take-out site, allowing natural succession and vegetation growth to occur which would protect the soil and improve vegetative cover at the site.

As discussed in section 3.3.3.1, *Affected Environment*, the project shoreline is largely undeveloped and heavily forested, providing ample suitable habitat for waterfowl, including wood ducks. Northern States' proposal to discontinue maintaining the four wood duck boxes at the project would not be detrimental to wood ducks given the amount of natural habitat available within and adjacent to the proposed project boundary.

Loud and disruptive activities can cause eagles engaged in nest building, incubating, or other reproductive behaviors to abandon the nest. Project maintenance activities could result in limited tree removal in the project boundary that could disturb bald eagles during the nest building, incubation, and fledging phases of their life cycle. Avoiding construction, maintenance, or vegetation management activities within 660 feet of any bald eagle nests during the nesting season, as proposed, would protect bald eagles from tree removal activities.

In its comments about requiring management plans for state-listed species, Wisconsin DNR does not specify which species could be affected by project operation and does not identify any specific measures for state-listed species. Michigan DNR's recommendation to protect migratory birds, herpetofauna, bats, and bat roosting areas does not identify any specific measures or associated objectives for these species. Neither Michigan DNR or Wisconsin DNR provide a nexus between project effects and terrestrial species. Similarly, River Alliance's recommendation to develop a plan to protect bald eagles and ospreys does not identify any specific measures to protect eagles or ospreys. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits of Michigan DNR's and River Alliance's recommendations, or analyze the benefits of management plans suggested in

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[45] *See* Appendix E, *Biological Assessment*, for the analysis of project effects on federally listed species.

Wisconsin DNR's comments. Implementing the measures described above would protect bald eagles from tree-removal activities. As to osprey, Northern States explains in its reply comments that osprey was not identified in state of Michigan's rare species review for the project. Without any known occurrences of ospreys at the project, there would be no project effects on the species. However, implementing the proposed buffer zone for any bald eagle nests would also tangentially protect any raptor nests that occur within the respective activity buffer zones for bald eagle nests during the nesting season.

Michigan DNR's, Michigan EGLE's, and Michigan HRC's recommendations for a land management plan do not identify any specific measures to protect or manage wildlife or terrestrial habitat. Without any specific measures, staff cannot assess the benefits of these recommendations. Under the Proposed Action, project management activities would only occur at project facilities, including project structures, access roads, parking areas, dams, penstocks, transmission line corridors, and recreation sites. As discussed above, continuing to maintain project access roads and parking areas, mow lawns, trim vegetation, and remove hazard trees to maintain project access would not materially affect terrestrial habitat or wildlife.

River Alliance recommends a 200-foot-wide, no-cut buffer within the project boundary to protect old growth timber, wildlife habitat, and water quality. However, maintaining a 200-foot-wide, no-cut buffer is not operationally feasible because Northern States would need to periodically manage vegetation and remove hazard trees to maintain access to project facilities and safety for recreation users during the term of any new license. Continuing vegetation management and hazard tree removal around project facilities would not significantly affect old growth timber, wildlife habitat, or water quality.

Invasive Species Management

The current license requires Northern States to monitor the project area for purple loosestrife and Eurasian milfoil, report any occurrences to Wisconsin DNR and Michigan DNR within 30 days, and coordinate with the agencies on removing these species. Northern States proposes to develop an invasive species management plan that includes: (1) biennial surveys for invasive species at regularly maintained areas, including recreation sites, in July or August; (2) control measures that could include manual removal, mechanical removal, and chemical treatment; (3) installing invasive species informational signs, if provided by Wisconsin DNR and Michigan DNR; (4) notifying Michigan DNR and Wisconsin DNR within 5 days of identifying any new "rapid response" species; and (5) annual reporting of monitoring results and a summary of any control activities to the resource agencies and the Commission.

Michigan DNR recommends, under section 10(j), that Northern States' proposed invasive species plan should also include the following provisions to prevent the spread of invasive species: (1) management actions to prevent the spread of invasive species; (2) monitoring on an annual basis; and (3) active control efforts and reporting of suspected and confirmed invasive species. Michigan DNR states that monitoring must include control measures whenever invasive species are found, to the extent possible; protocols for ground-disturbing activities and revegetation of disturbed areas using native plant species and seeds; follow-up monitoring and reseeding efforts; and using certified weed-free materials. Further, Michigan DNR states that invasive species management measures must include, at minimum, the following species:

Michigan Watch List Species;[46] species listed under Wisconsin NR 40;[47] regional Cooperative Invasive Species Management Area priority species,[48] and purple loosestrife. In its comments, Wisconsin DNR states that it plans to issue a certification that would require an invasive species management plan to ensure compliance with state regulations on invasive species under Wisconsin NR 40. Wisconsin DNR states that the plan would include methods, communications, reporting, and management actions.

River Alliance recommends that Northern States develop a plan for monitoring invasive species every 2 years, including provisions for using the "*Early Detection and Rapid Response Methodology*" for invasive species listed as prohibited under Wisconsin NR 40.

Our Analysis

The Invasive Species Study identified invasive plants at the project that are prevalent throughout the State of Wisconsin and the Upper Peninsula of Michigan. There is no available information indicating that project operation and maintenance activities have caused the spread or proliferation of invasive plants at the project. As stated above in *Project Operation and Maintenance*, continuing to operate the project in a run-of-river mode would not affect terrestrial habitat along the shoreline of the impoundment, would minimize water level fluctuations in the impoundment, and would minimize erosion. Also, considering the wide distribution of the invasive species known to occur at the project and their propensity to disperse naturally, the potential for project-related recreational use to spread these invasive species to a new area is very low and inconsequential. Northern States' proposal to construct a new parking area would permanently convert a mowed lawn area into a new gravel parking area, which would not affect the spread or proliferation of invasive species. Northern States is not proposing any other land-disturbing activities, construction, or modifications to project facilities or operation that would facilitate the spread of invasive plant species. Therefore, it is unlikely that the proposed operation and maintenance of the project would result in the introduction or spread of invasive plants at the project.

Northern States' proposed invasive species management plan and Michigan DNR's and River Alliance's recommended invasive species plans could help determine if an invasive species is proliferating at the project during the term of any new license and could reduce the proliferation of any such species at the project during the term of any new license. However, there is no information in the project record indicating that the project has caused or will cause

[46] Michigan DNR, *Michigan's Invasive Species Watch List*, https://www.michigan.gov/invasives/-/media/Project/Websites/invasives/Documents/ID-Report-resources/IS-watch-list.pdf?rev=0bdf27af93d44a38b09779bf689acc90&hash=8DB34B24AD7E1C6DE27A6E127B34FC9C.

[47] Wisconsin DNR, *Wisconsin Ch. NR 40 Invasive Species List* (May 1, 2015), https://dnr.wisconsin.gov/sites/default/files/topic/Invasives/nr40lists.pdf.

[48] Michigan Invasive Species Coalition (2024), https://www.michiganinvasives.org/managementareas/.

the spread or proliferation of invasive species; that the invasive species currently at the project are adversely affecting wildlife or its habitat; or that any control measures would be successful at reducing invasive species. Therefore, there is no apparent project-related benefit from an invasive species management plan.

3.3.4 Threatened and Endangered Species

Section 7 of the ESA[49] requires federal agencies to ensure their actions are not likely to jeopardize the continued existence of any federally listed endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. According to the FWS's IPaC system, the following federally listed species have the potential to occur at the project: endangered gray wolf (*Canis lupus*), NLEB (*Myotis septentrionalis*), and piping plover (*Charadrius melodus*); and threatened Canada lynx (*Lynx canadensis*) and rufa red knot (*Calidris canutus rufa*).[50] IPaC also indicates that the proposed threatened monarch butterfly (*Danaus plexippus*) has the potential to occur at the project. No critical habitat for these species occurs at the project.

Although IPaC initially stated that the federally proposed endangered TCB (*Perimyotis subflavus*) has the potential to occur at the project,[51] the most recent IPaC list does not include TCB.[52] Commission staff reviewed FWS's range map for this species and concludes that the TCB does not have the potential to occur at the project (Figure B-3).

Our analyses of project effects on the federally listed and proposed species are presented in Appendix E, *Biological Assessment*. Based on the available information, we conclude that relicensing the project would: (1) have no effect on the Canada lynx, gray wolf, piping plover, or rufa red knot; (2) not likely adversely affect the NLEB; and (3) not likely jeopardize the continued existence of the TCB or monarch butterfly.

3.3.5 Recreation, Land Use, and Aesthetics

3.3.5.1 Affected Environment

There are numerous recreational opportunities near the project, including hiking, fishing, boating, wildlife viewing, watersports, and snowmobiling. As described in section 2.1.1, *Existing Project Facilities,* and shown in Figure B-4, project recreation facilities include the hand-carry boat take-out site, scenic overlook, tailrace fishing site, parking area, and access

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[49] 16 U.S.C. § 1536.

[50] *See* Commission staff's September 30, 2025 Memorandum on Endangered Species Act List.

[51] *See* Commission staff's August 14, 2023 Memorandum on List of Threatened, Endangered, Candidate, and Proposed Species.

[52] *See* Commission staff's September 30, 2025 Memorandum on Endangered Species Act List.

trail.[53] Additional recreation opportunities are available at the following locations in the project vicinity.

- North Country National Scenic Trail (Scenic Trail): This 4,800-mile-long hiking and backpacking trail stretches across eight northern states from Vermont to North Dakota and is one of eight national scenic trails in the United States. In the project vicinity, the trail runs along Wisconsin Highway 122 and Michigan County Road 505, crossing over the Montreal River approximately 1,000 feet upstream of Superior Falls Dam.[54]
- Lake Superior Overlook: This scenic overlook is owned and maintained by Gogebic County and is approximately 650 feet northeast of the powerhouse adjacent to the project boundary. It is accessed from a county parking area adjacent to the access trail leading to the tailrace fishing site.
- Powers Road Trail Network: This trail network, maintained by Gogebic County and located a few miles east of the project, includes over 30 miles of multi-use trails that provide opportunities for hunting, wildlife viewing, hiking, biking, horseback riding, snowmobiling, and off-road vehicles.
- Saxon Harbor Park: This 34-acre park is owned and maintained by Iron County and located on Lake Superior approximately 1 mile west of the project. The park includes a marina, campground, picnic area, restrooms, and parking area.

Northern States conducted a *Recreation Study*[55] in 2021 to document recreation utilization and recreation needs within the project boundary and determine the maximum capacity of each project recreation facility. Northern States observed a total of 102 users over 14 days during the primary recreation season from April through September, for an average of 7.2 users per day. On average, recreation use at all facilities was less than 20% capacity. The highest maximum daily capacity was 86.7% at the tailrace fishing site.

Land use in the project area is rural and largely forested. The project boundary under the current license encloses 390.2 acres, as described in section 2.1.2, *Project Boundary Under the Current License*. Land in the project boundary under the current license is mostly undeveloped forested land, except for project facilities listed in section 2.1.1, *Existing Project Facilities* and county/state roads. To ensure retention of the natural character and visual quantity of project

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[53] Northern States has a perpetual easement with Gogebic County to access the tailrace fishing site from an access route owned by Gogebic County.

[54] In its letters filed on June 7, 2024, and November 11, 2024, Park Service states a temporary reroute moved the trail off Michigan County Road 505 and onto a multi-use motorized path that crosses Northern States' property within the project boundary under the current license. In a response filed on August 29, 2024, Northern States states that it has not authorized a temporary reroute of the trail onto project land.

[55] *See* Northern States' December 30, 2022, Final License Application at Exhibit E, Appendix E-46, *Recreation Inventory and Condition Assessment Forms*.

land, the Commission required Northern States to develop a Visual Resources Plan.[56] Article 413 of the current license required the plan to include the following provisions: (1) identify all natural areas and their uses within the project boundary; (2) establish management methods for maintaining the visual qualities of lands; (3) describe the standards for protecting the visual quality of the project when allowing for the non-project use of project land; and (4) describe standards for blending the project works into the existing landscape character. On January 21, 1998, Commission staff approved Northern States' Visual Resources Protection Plan filed on July 28, 1997.[57] According to Northern States, pedestrian recreational access is allowed on all land that it owns, including for activities such as hunting, bank fishing, hiking, wildlife viewing, and site seeing, except for land fenced for safety or security purposes.

The project provides access to aesthetic resources such as Superior Falls, which is visible from the scenic overlook. The current license requires Northern States to release a minimum aesthetic flow of 8 cfs into the bypassed reach from Saturday before Memorial Day through October 15, and to increase the release to 20 cfs from 8 a.m. to 8 p.m. on weekends and holidays during the same period.

3.3.5.2 Environmental Effects

Recreation

Northern States proposes to continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the project at any given point in time. Northern States states that this operation mode protects recreation opportunities.

Northern States proposes to continue to maintain the scenic overlook, tailrace fishing site, parking area, and access trail. To improve user safety, Northern States proposes to relocate the hand-carry boat take-out site from the western shoreline of the impoundment to the eastern shoreline of the impoundment, and develop a new gravel parking area for six vehicles to provide access to the take-out site on the eastern shoreline of the impoundment. Northern States proposes to install informational, safety, and Part 8 signage at project recreation facilities.

American Whitewater filed comments stating that it supports Northern States' proposal to relocate the take-out site. American Whitewater explains that although the take-out site will move the take-out point to the lower portion of the impoundment, the new take-out site will be safer than the existing site. American Whitewater explains that at the existing site, boaters park along the road, creating potential safety hazards. In contrast, American Whitewater states that the proposed site offers off-road parking and additional space for staging and loading boats and gear. American Whitewater states that, while boaters typically prefer to minimize the distance paddled across the flatwater of a reservoir, the extra 700 feet is acceptable in exchange for the improved parking and staging area.

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[56] *See Northern States Power Company – Wisconsin*, 70 FERC ¶ 62,029 (1995), *order on reh'g*, 78 FERC ¶ 621,363 (1997).

[57] *See Northern States Power Company*, 82 FERC ¶ 62,030 (1998).

River Alliance recommends developing a recreation management plan that contains the following provisions: (1) the recreation improvements proposed by Northern States; (2) replace the chain link fence at the scenic overlook with a split rail fence; (3) provide additional parking as needed to address parking capacity exceedances during the summer; (4) provide brochures showing the location of recreational facilities; (5) maintain recreation facilities in good condition; and (6) upgrade and install signage as needed. In its comments, Wisconsin DNR states that it plans to issue a certification that would require a recreation plan to ensure that the amenities meet department standards for public recreation, handicap accessibility, public rights, and safety. Michigan DNR also recommends developing a recreation management plan.

Michigan DNR recommends providing recreation amenities if current recreation sites become overcrowded or are no longer maintained. Michigan DNR states that the parking area for the non-project Lake Superior Overlook is exceeding capacity in the summer and that improved walking and multi-use trails are needed in the project vicinity.

Michigan HRC states that the parking capacity of the non-project Lake Superior Overlook is exceeded in the summer and recommends that Northern States provide parking facilities as necessary to ensure sufficient capacity is available to access the Lake Superior Overlook.

As provided by River Alliance in its recommended recreation management plan, Michigan DNR and Michigan HRC recommend replacing the chain link fence at the scenic overlook with a split rail fence to improve scenic viewing.

Interior and American Whitewater recommend that Northern States provide real-time flow information for recreation users. Interior recommends that Northern States publish the information on the internet and make it available for use by third-party sites using an Application Programming Interface. Interior states that providing information on the internet as recommended would allow the public to make more informed decisions about recreation use, thereby improving visitor experience and safety. Interior also recommends that Northern States collaborate with the National Park Service and the North Country Trail Association (Trail Association) to improve the connectivity and user experience of the Scenic Trail, including: (1) by providing a long-term agreement, such as an easement with the Trail Association on Northern States' land, to enable the Scenic Trail to connect between Lake Road (Michigan County Road 505) near the Wisconsin/Michigan border and the Montreal River Gorge Overlook within Michigan; and (2) to identify future opportunities to enhance visitor experiences, promote off-road trail routes, and maximize trail connectivity in Wisconsin traveling west from the Wisconsin Highway 122 bridge over the Montreal River.

Interior recommends installing informational signage at the project recreation facilities. Interior recommends that signage should show general information on impoundment water levels, flow releases, and other aspects of the project that affect recreation opportunities and experiences. Interior states that this would provide for advanced and more informed recreational decisions by the public, thereby improving the visitor experience and safety. Interior also recommends that Northern States include a Quick Response (QR) code and website address on signage so the public can access up-to-date information on real-time flows, reservoir elevations, flow release schedules, and how to access the tailwater access site.

In response to comments, Northern States states that it supports the development of a recreation management plan with the following provisions: (1) description of proposed recreation facilities, including signage; and (2) a schedule for completing all proposed improvements. Northern States is not proposing to provide recreation brochures, but states that it would include a map of the project recreation facilities in the recreation plan and on Part 8 signs. With regard to River Alliance's recommendation to provide additional parking at the project to address high summer demand, Northern States states that sufficient capacity is available for all interested users at the parking area of the scenic overlook and along the side of the access road, such that no additional parking is needed. Northern States also states that the scenic overlook is situated at least 40 feet above the Montreal River. As such, it states that a split rail fence is not an appropriate means to protect the general public, especially small children, from passing through the fence. Northern States states that the existing chain link fence is the appropriate barrier for providing public safety while still allowing a view of the falls. Northern States also states that it is only proposing to provide daily flow information online for the Saxon Project.

Our Analysis

Continued run-of-river operation would minimize impoundment fluctuation levels and ensure that downstream flows are not affected by normal project operation. Operation of the project in a run-of-river mode would continue to provide flow for water-based recreation activities, including boating upstream or downstream of the project, and would not alter boating opportunities relative to current operation. Therefore, the proposed project operation would not significantly affect recreation use.

Numerous recreation opportunities exist at the project. The *Recreation Study* indicates that the existing recreation facilities are underutilized and provide capacity to meet the recreation needs for the term of any new license. Northern States' proposal to continue maintaining the scenic overlook, tailrace fishing site, parking area, and access trail would ensure recreation opportunities continue over the term of any new license and that the public would have continued access. Northern States' proposal to relocate the boat take-out site would provide a safer take-out site for boaters because the existing boat-take-out site sits on the edge of a 55-mile-per-hour section of State Highway 122, that also lacks paved road shoulders. This generally increases the likelihood that a pedestrian could be hit by a motorist. Moving the boat take-out site to the proposed location would significantly reduce the potential for roadside collisions between recreationalists and motorists because the new location allows sufficient safe distance between motorists and recreation users. Northern States proposal and Interior's recommendation to add and update directional and safety signage at project recreation facilities would help ensure continued access.

Developing a recreation management plan, as recommended by Michigan DNR and River Alliance, suggested by Wisconsin DNR, and supported by Northern States, would benefit recreation users by providing a single reference document that describes all project recreation facilities, improvements, and maintenance during the term of any new license.

Michigan DNR's, Michigan HRC's, and River Alliance's recommendation to replace the chain link fence with a split rail fence at the scenic overlook could improve scenic viewing at the scenic overlook, but the scenic overlook is high above the Montreal River and the open space between rails could allow small children or pets to pass through the fence, thereby presenting a hazard for visitors. The chain link fence that is currently in place provides sufficient protection for visitors and sufficient viewing opportunities. Therefore, there is no benefit to replacing the chain link fence with a split rail fence.

Michigan DNR's recommendation to provide recreational amenities if current recreation sites become overcrowded or no longer maintained does not include specific measures. Although Michigan DNR discusses overcrowding at the parking area for the non-project Lake Superior Overlook and improving trails in the project vicinity, it does not specify any measures to be implemented during the term of any new license, or state when those measures would need to be implemented. Similarly, Michigan HRC's and River Alliance's recommendations to provide additional parking do not include specific measures because they only generally discuss measures for providing additional parking as needed to meet future demand and they do not provide a specific timeline for implementing any measures. Without specific measures to analyze and consider under the FPA, we cannot assess the benefits of the recommendations to recreation at the project. The *Recreation Study* showed that all sites that provide access to project land and water are currently underutilized. In general, additional parking would not be beneficial for recreation users to access project land or water, as sufficient parking is currently available at the project's parking area at the surge tank for recreation users to access project recreation facilities, including the scenic overlook and tailrace fishing site. Northern States is also proposing to develop a new hand-carry boat access site that includes a new gravel parking area. Although stakeholders raise concerns about the parking area at the Lake Superior Overlook exceeding capacity in the summer, the Lake Superior Overlook is owned and maintained by Gogebic County and is not a project recreation facility. As proposed, the project recreation facilities would provide sufficient access for project-related recreation use and continue to be maintained by Northern States during the term of any new license. Therefore, there would be no project-related benefit to providing additional parking or recreational amenities beyond those proposed by Northern States.

River Alliance's recommendation to provide recreation brochures at the project would provide similar benefits as Northern States' proposed informational and Part 8 signage. However, recreation brochures could be depleted and intermittently unavailable until refilled by Northern States.

Including the following provisions in the recreation management plan would enhance recreation at the project: (1) a description of all licensed project recreation facilities, including a map, and associated informational, safety, and Part 8 signage; (2) a description of operation and maintenance of the licensed project recreation facilities; and (3) a schedule for completing all required recreation improvements.

Interior and American Whitewater recommend that Northern States provide real-time flow information for recreation users, and Interior recommends that Northern States publish the information on the internet and make the data available for use by third-party sites using an Application Programming Interface. Interior states that providing real-time flow information on the internet would allow the public to make more informed decisions about recreation use. Recreation use at the project includes boating in the impoundment, fishing in the tailrace, and aesthetic viewing at the scenic overlook. Northern States is proposing to operate the project in a run-of-river mode with stable impoundment elevations that ensures boating opportunities regardless of flow. In addition, Northern States is proposing minimum aesthetic flows in the bypassed reach as discussed below in *Aesthetics* for aesthetic viewing. Moreover, Lake Superior backwaters the downstream reach below the powerhouse, ensuring fishing opportunities at the tailrace fishing site regardless of flow. Based on the recreation opportunities provided by the Proposed Action, providing real-time flow information on the internet would not benefit recreation use.

Interior's recommendation to include general information on water levels and flow releases on project signage would not provide information that benefits recreation because, as discussed above, the project would operate in a run-of-river mode, maintain stable water levels, would not provide scheduled flow releases (e.g., for whitewater boating), and would provide recreation opportunities regardless of flow at the project. Considering that recreation opportunities and access would not change with flow or other variables, there would also be no benefit associated with Interior's recommendation to include a QR code and a website address on signage. In response to comments, Northern States states that it intends to include a map of the project recreation facilities in the recreation management plan and on Part 8 signs, which could benefit recreation access by providing information on recreation opportunities for recreation users at the project. For example, a map would provide adequate information to access the tailrace fishing site.

Interior's recommendation for Northern States to collaborate with the National Park Service and Trail Association to improve the connectivity and visitor experience of the Scenic Trail, including establishing an easement and enhancements of off-road trails, pertains to land use and access on non-project land (i.e., land outside of the proposed project boundary; Figure B-5). Interior has not identified any adverse project effects on recreation that would be mitigated by its recommendation or how its recommendation would enhance recreation at the project. Therefore, there is no indication that Interior's recommendation would benefit recreation at the project.

Land Use

Northern States proposes to enclose 46.1 acres of land and water in the project boundary, including: (1) the 16.3-acre impoundment; (2) 26.8 acres of land that includes land underlying project facilities and land adjacent to project facilities; (3) 2.7 acres of water associated with the bypassed reach; and (4) 0.3 acre of water downstream of the powerhouse. The proposed project boundary does not include the following land and water that is included in the project boundary under the current license: (1) 266.3 acres of land upstream of the dam, including all land above a contour elevation of 740.2 feet, which is the spillway crest elevation of the dam and the normal surface elevation of the impoundment; (2) 10.5 acres of water associated with the Montreal River upstream of the impoundment; and (3) 67.3 acres of land downstream of the dam, including land adjacent to the bypassed reach and land adjacent to project facilities. Northern States states that the proposed project boundary includes all land and water necessary for the safe and effective operation of the Superior Project and all lands required for other project purposes, including but not limited to aesthetics, flowage, public recreation, shoreline control, and protection of environmental and archaeological resources.

Northern States states that it would continue to mow lawns, trim encroaching vegetation, and remove hazardous trees in the project boundary, as needed to maintain project facilities and access to project recreation areas. Northern States also states that no timber harvests are planned on proposed project land downstream of the dam, to provide an aesthetic buffer for Superior Falls and the Montreal River Canyon.[58] Northern States states that it is not proposing any land use changes for land that it is in the project boundary under the current license but not in the proposed project boundary.[59]

Michigan DNR recommends that the project boundary in any new license include all land and water that is in the project boundary under the current license, and that the project boundary include additional land as needed to enclose the ordinary high-water mark. Michigan DNR states that maintaining protections on the riparian corridor and surrounding uplands is instrumental in ensuring project benefits, including water quality, habitat conservation, rare and sensitive species protection, and recreational and aesthetic values. Michigan DNR also states that a substantial area of wetlands that is not included in the proposed project boundary appears to be influenced by water levels at the project and that these areas must be retained for natural resource protection and project operation.

Michigan EGLE recommends that the project boundary in any new license include all land and water that is in the project boundary under the current license and states that the current boundary includes natural land cover that acts as a buffer for water quality from human activities. Michigan EGLE states that excluding this land from the project boundary would remove this protection and any future development may render obsolete the water quality studies used to determine compliance with Michigan's Water Quality Standards.

River Alliance recommends that the project boundary in any new license include all land that is in the project boundary under the current license, for the use and enjoyment of the public and for wildlife habitat. River Alliance states that although the land may not be needed for project operation, it does provide land for public enjoyment for outdoor recreational activities, including shore fishing, hiking, camping, picnicking, bird watching and other wildlife viewing, and general aesthetic viewing. In addition to being a recreational resource, River Alliance states that project land provides habitat for many species of upland game that contribute to the wildlife community of the region. River Alliance states that, if the land cannot be included in the project boundary based on the Commission's regulations, then Northern States should be required to formulate a specific land instrument (such as deed or easement to the State or County) such that land withdrawn from the project boundary can remain open for public use.

Michigan HRC recommends that the project boundary in any new license include all land that is in the project boundary under the current license, because these lands protect water quality by protecting the riparian corridor and any proposed changes to land uses over the course of the term of any license would require Commission approval (and presumably resource agency and Tribal consultation). Michigan HRC also states that, while Northern States states that it does not

[58] *See* Northern States' August 28, 2023 Response to Additional Information Request.

[59] *See* Northern States' January 5, 2024 Response to Additional Information Request, at 5, 7.

anticipate any changes to land use in the reasonably foreseeable future, there are no guarantees that this would remain the case over the entire term of a new license.

Michigan DNR recommends, under section 10(j), that Northern States develop a land management plan with provisions to maintain and protect the project's aquatic and terrestrial habitats. Michigan DNR explains that a land management plan would provide a method to ensure that species and their habitats are adequately considered by licensee activities at the project, including the protection and management of rare, sensitive, and invasive species, and changes to rare and sensitive species that could be considered through annual meetings that are part of the plan. Michigan EGLE and Michigan HRC recommend the development of a land management plan that includes measures to protect environmental resources associated with lands in the currently licensed project boundary. Michigan HRC also recommends that recreation management provisions be included in a land management plan to clearly identify all facilities and responsibilities for operation and maintenance.

Our Analysis

Land in the project area is largely forested and undeveloped, except for the project facilities and roads. The project boundary under the current license encloses 390.2 acres, which includes 360.4 acres of land, including land underlying project facilities and land adjacent to the bypassed reach, impoundment, and Montreal River upstream of the impoundment. Project land is open to public use, including hunting, bank fishing, hiking, wildlife viewing, and site seeing, except for land fenced for safety or security purposes. As discussed in its January 5, 2024 letter, Northern States conducted one timber harvest at the project during the term of the current license, including harvesting all overstory trees in 14 acres of a red pine plantation, clearcutting 26 acres of aspen, and selectively harvesting 81 acres of northern hardwood stands. Per the Visual Resources Protection Plan (license article 413), no harvesting activities took place within an approximate 200-foot buffer of the Montreal River and the project impoundment.

The proposed project boundary encloses 46.1 acres, which includes 26.8 acres of land underlying project facilities and land adjacent to project facilities. Land use on the 26.8 acres of land would continue to be limited to project operation and maintenance activities, such as hydropower generation, recreation, vegetation management, and road grading. Northern States is not proposing to alter land use in the proposed project boundary, except for developing a new hand-carry boat take-out site and parking area on the eastern shoreline of the impoundment. As discussed in section 3.3.3.2, *Project Operation and Maintenance*, the new take-out site and parking area would be located in an existing mowed lawn area. Because the area is already deforested, construction of the new take-out site and parking area would not significantly affect land use. Also, continuing to mow lawns, trim vegetation, and remove hazard trees to maintain project access would not affect land use. Northern States is not proposing to conduct any timber harvests on land in the proposed project boundary.

Michigan DNR recommends developing a land management plan that includes measures to maintain and protect aquatic and terrestrial habitats. The only provision that Michigan DNR describes for the land management plan is an annual consultation meeting between Northern States and interested stakeholders to discuss land management. However, consultation alone is an administrative measure and would not provide any foreseeable benefits for environmental resources. In its explanation for the land management plan, Michigan DNR states that the Commission should consider protective buffers to timber harvests and protective requirements for sensitive species; however, as explained above, Northern States is not proposing timber harvesting on any land in the proposed project boundary. As discussed in section 3.3.3.2, *Terrestrial Resources*, *Environmental Effects*, under the Proposed Action, project management activities would only occur at project facilities to maintain project access roads and parking areas, mow lawns, trim vegetation, and remove hazardous trees to maintain project access, which would not materially affect wildlife or its habitat. Therefore, there is no reasonably foreseeable project-related benefit associated with a land management plan for the proposed project.

Michigan EGLE's and Michigan HRC's recommendations to develop a land management plan do not identify any specific resources that would be protected by the recommended plan or any specific measures that would provide protection to any lands within the project boundary under the current license. Without any specific measures to analyze and consider under the FPA, staff cannot assess the benefits of these recommendations. As to Michigan HRC's recommendation to include recreation management provisions in a land management plan, as discussed above in section 3.3.5.2, *Recreation*, Northern States could develop a recreation management plan that includes provisions for operation and maintenance of project recreation facilities. With the development of a recreation management plan, there would be no additional benefit associated with including recreation management provisions in a land management plan.

Michigan DNR, Michigan EGLE, River Alliance, and Michigan HRC recommend that the project boundary in any new license include all land and water that is in the project boundary under the current license. The stakeholders generally state that the land and water are needed to protect natural land, water quality, wildlife habitat, sensitive species, recreation, and aesthetics. However, Northern States is not proposing any project operation or maintenance activities on any land outside of the 26.8 acres in the proposed project boundary. The other 344.1 acres of land and water in the currently licensed project boundary do not include any project facilities and there is no indication that the 344.1 acres of land and water are needed for project operation, maintenance, or other project purposes, such as project recreation, shoreline control to mitigate project effects, or protection of environmental resources from any adverse effects associated with the proposed relicensing.[60]

In its January 5, 2024 letter, Northern States indicates that it would continue to selectively harvest 81 acres of hardwood on land outside of the proposed project boundary. However, any timber harvesting on land outside of the proposed project boundary would be a non-project action and would not be associated with project operation, maintenance, or other project purposes.

In summary, because the 344.1 acres of land and water are not needed for project purposes and there would be no project-related adverse effects on or associated with this land

[60] According to the Commission's regulations, project boundaries should enclose "only those lands necessary for operation and maintenance of the project and for other project purposes, such as recreation, shoreline control, or protection of environmental resources." 18 C.F.R. § 4.41(h)(2).

and water, there would be no project-related benefit from and justification for a license condition requiring a land management plan for the 344.1 acres of land and water located outside of the proposed project boundary. Moreover, there would be no justification for including the 344.1 acres of land and water within the project boundary of any new license.

Aesthetics

Northern States proposes to continue releasing a minimum aesthetic flow of 8 cfs to the bypassed reach from the Saturday before Memorial Day through October 15 and to increase the minimum aesthetic flow to 20 cfs from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period. River Alliance recommends that Northern States release a minimum aesthetic flow to the bypassed reach for the enjoyment of the public. River Alliance states that the minimum flow should be determined in consultation with resource agencies and other stakeholders.

Our Analysis

Northern States conducted an *Aesthetic Flow Study*[61] to evaluate the effects of project operation on aesthetic flows over Superior Falls. Northern States released flows of 8 cfs and 15 to 35 cfs at 5-cfs increments at the project and provided photographs and links to videos of each flow from the scenic overlook for stakeholder review. At a flow of 8 cfs, there is a noticeable flow of water over Superior Falls, but it is confined to a relatively small section of the overall width of the river at Superior Falls. At a flow of 20 cfs, as proposed by Northern States during weekends and holidays, there is a noticeable increase in flow over Superior Falls. Therefore, Northern States' proposal would continue to benefit aesthetic resources at the project during peak times of viewing.

River Alliance's recommendation does not include any specific measures. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefit of the recommendation.

3.3.5.3 Cumulative Effects

In SD2, Commission staff identified recreation, specifically whitewater boating opportunities, as a resource that could be cumulatively affected by the continued operation and maintenance of the Superior Project in combination with the Saxon and Gile Projects and other activities in the Montreal River. Staff stated that the geographic scope for the analysis of cumulative effects would encompass the Montreal River from the Gile Project to Lake Superior.

As discussed in section 3.3.2.3, *Cumulative Effects on Aquatic Resources*, the Superior Project relies on the Gile Project to augment flows for generation during summer and winter low-flow periods. Prior to the development of the projects, the Montreal River and West Fork flowed freely. The dams on the Montreal River and West Fork now impede river flows for whitewater boating. However, river flows are available below these dams for whitewater

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[61] *See* Northern States' December 30, 2022 Final License Application at, Exhibit E, section 9.2.3.2.

boating. Nonetheless, the presence of multiple dams could have a cumulative effect on the magnitude of flows for whitewater boating on the Montreal River and West Fork.

Northern States' proposal to relocate the hand-carry boat take-out site from the western shoreline of the impoundment to the eastern shoreline of the impoundment, would provide a safer take-out site for boaters utilizing whitewater flows in the Montreal River upstream of the project. Because the proposed relicensing would provide a safer take-out site than under the current license, the proposed relicensing would be cumulatively beneficial for whitewater boating when added to other past, present, and reasonably foreseeable actions.

3.3.6 Cultural and Tribal Resources

3.3.6.1 Affected Environment

Cultural resources represent things, structures, places, or archaeological sites that can be either prehistoric or historic in origin. Pursuant to section 106 of the NHPA, the Commission must take into account whether any historic property within the proposed project's area of potential effects (APE) could be affected by the issuance of a license for the project. Northern States defines the APE in its license application as lands enclosed by the project boundary as delineated in the current license; attached or associated buildings and structures extending beyond the project boundary, which contribute to the National Register eligibility of the hydroelectric generating facility; and lands or properties outside the project boundary, where the project may cause changes in the character or use of historic properties, if any historic properties exist.

Tribal Consultation

By letter issued on October 9, 2018, Commission staff initiated consultation Keweenaw Bay Indian Community (Keweenaw Tribe), Miami Tribe of Oklahoma (Miami Tribe), Mille Lacs Band of Ojibwe, Bad River Band of Lake Superior Indians, Fond du Lac Band of Minnesota Chippewa Tribe, Fort Belknap Indian Community, Grand Portage Band of Chippewa Indians, Lac Vieux Desert Band of Lake Superior Chippewa Indians of Michigan, Leech Lake Band of the Minnesota Chippewa Tribe, Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin, Sokaogon Chippewa Community (Sokaogon Tribe), Menominee Indian Tribe of Wisconsin, St. Croix Chippewa Indians of Wisconsin, White Earth Band of the Minnesota Chippewa Tribe, and Lac du Flambeau Band of Lake Superior Chippewa Indians (Lac du Flambeau Tribe) (collectively, the Tribes). Staff followed up by telephone and electronic mail in October and November 2018 and on January 30, 2019.[62]

The Lac du Flambeau Tribe, Miami Tribe, and Keweenaw Tribe responded to Commission staff that they are interested in consulting on the proposed relicensing and filed comments indicating interest in the project. However, further outreach attempts to the Tribes

[62] *See* Commission staff's February 25, 2019 Memorandum on Consultation with Tribes for the Superior Falls Hydroelectric Project No. 2587. Filed on August 22, 2023.

were unsuccessful. On February 4, 2019, the Mille Lacs Band of Ojibwe contacted Commission staff by electronic mail, stating that the Tribe is not interested in consulting on project.[63]

On February 9, 2023, the Sokaogon Tribe contacted Commission staff via electronic mail to request copies of any HPMP that might exist for the project, any HPMP annual reports, and any archaeological reports. Commission staff provided the Sokaogon Tribe with information to obtain the archaeological study report that was conducted for the relicensing process. No further requests or comments were filed by the Tribe.[64]

In a notice issued on February 13, 2020, Commission staff designated Northern States as its non-federal representative for the purposes of conducting section 106 consultation under the NHPA. Pursuant to section 106, and as the Commission's designated non-federal representative, Northern States consulted with potentially affected Tribes to identify historic properties, determine National Register eligibility, and assess potential adverse effects on historic properties within the project's area of potential effects.[65]

Based on the Tribes' expressed interest in consulting on the proposed relicensing, Commission staff issued a tribal outreach letter to the Miami, Keweenaw, Lac du Flambeau, and Sokaogon Tribes on August 23, 2023, to determine if any of the Tribes had an interest in participating in a consultation meeting for the project. On September 13, 2023, the Miami Tribe stated by telephone that the project is outside the Tribe's area of interest. No response was received by the Sokaogon, Keweenaw, or Lac du Flambeau Tribes.[66]

Northern States provided the pre-application document (December 30, 2019) and the license application (December 30, 2022) to the above-referenced Tribes and the following additional Tribes: Bay Mills Indian Community; Fond du Lac Band of Lake Superior; Forest County Potawatomi Community of Wisconsin; Ho-Chunk Nation; Hannahville Potawatomi Indian Community; Iowa Tribe of Oklahoma; Lac Courte Oreilles Band of Chippewa Indians; Oneida Nation of Wisconsin; Prairie Island Indian Community; Prairie Band Potawatomi Nation; Sac and Fox Nation of Missouri in Kansas and Nebraska; Sac and Fox Nation of Oklahoma; Sault Ste. Marie Tribe of Chippewa Indians; Stockbridge-Munsee Tribe of Mohican Indians. No Tribes filed comments on the pre-application document or the license application.

Cultural History

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[63] *See* Commission staff's August 22, 2023 Memorandum on Consultation with Tribes for the Superior Falls Hydroelectric Project No. 2587.

[64] *See* Commission Staff's March 1, 2023 Memorandum on Consultation with Tribes for the Superior Falls Hydroelectric Project No. 2587.

[65] *See* Commission staff's February 13, 2020 *Notice of Intent to File License Application and Request to Use the Traditional Licensing Process*.

[66] *See* Commission staff's October 16, 2023 Memorandum on Consultation with Tribes for the Superior Falls Hydroelectric Project No. 2587.

The project is in the ceded territory of the Ojibwe (Chippewa). Riverine fishing, hunting, and maple sugar and wild rice harvesting are significant aspects of the Ojibwe subsistence practices. In 1842, Chippewa Tribes entered into a Treaty with the United States that ceded the land where the Superior Project is located to the United States.[67] Article II of the 1842 Treaty provides for the right of hunting and "the other usual privileges of occupancy." Tribal members may exercise off-reservation resource rights under agreements, permits, and regulations, which generally do not open private lands for such activities unless the land is otherwise open to the public.[68]

Industrial History

The Superior Project was constructed in 1917 by the Ironwood & Bessemer Railway & Light Company. The original dam was raised by 5 feet in 1925 and by an additional 4 feet by 1936. A major spillway renovation was completed in 1999 and included refurbishing two existing steel radial gates, removing three existing wood radial gates, and replacing them with a larger steel radial gate and an overflow spillway. Modifications to the powerhouse occurred in 1987 with the resurfacing of the exterior and the replacement of most of the original windows.[69] Except for the dam and powerhouse, the original components of the hydroelectric facility have been removed or replaced.

Until 1985, there was a small complex of houses including two operator's dwellings, a storage building, barn, chicken house, outhouse, and an older building that was present prior to the construction of the project in 1917. These buildings were used by the dam operators and were demolished by 1985. Mid-twentieth century aerial images identify the locations of these former buildings and outbuildings in the APE.[70]

Historic Properties

To assess the potential effects of the project's relicensing on cultural resources, Northern States conducted a literature review of architectural and archaeological properties in the APE and an archaeological shoreline survey. The project facilities meet the 50-year age requirement for

[67] Treaty of 1842 (7 Stat 591).

[68] *See* Great Lakes Indian Fish and Wildlife Commission's regulations on exercising off-reservation treaty rights in Michigan. Available at: https://glifwc.org/exercising-treaty-rights/treaty-seasonal-harvest-regulations. *See also Wisconsin 1837 and 1842 – Off-reservation Conservation Code.* Available at https://glifwc.org/sites/default/files/uploads/documents/2025-01/Wisconsin.1837.1842.Model_.Off_.Reservation.Conservation.Code_.2024Dec.pdf.

[69] *See* Northern States Power Company's December 16, 1991 Final License Application (FERC No. 2587-002) at Exhibit E, Appendix E-1.

[70] See Wisconsin Historic Aerial Imagery Finder, Iron County, Wisconsin. U. S. Department of Agriculture, July 13, 1951. Available at https://maps.sco.wisc.edu/WHAIFinder/

evaluation of eligibility for listing in the National Register.[71] As part of the application for the current license,[72] Northern States evaluated project facilities to determine their eligibility for listing in the National Register as a historic district. The following project facilities were evaluated: powerhouse, dam, penstocks, surge tank, substation, pipe, and the operations and maintenance buildings, and the non-project Wisconsin State Highway 122 bridge. The evaluation determined that the project facilities did not meet National Register eligibility Criterion A or C and past repairs and modifications to the project resulted in a loss of integrity.[73] As concluded by the Wisconsin and Michigan SHPOs in respective letters dated December 16, 1991 and May 1, 1991,[74] for the original licensing of the project, the Superior Falls facilities are not eligible for listing in the National Register.

Northern States conducted a literature review and archaeological survey of the project shoreline in 2021. The literature review identified four previously recorded archaeological sites within the project boundary under the current license (20GB3 in Michigan and 47IR46, 47IR47, and 47IR48 in Wisconsin).

The proposed project boundary will result in the removal of sites 47IR46, 47IR47, and 47IR48 from the project boundary, but none of the archaeological sites are identified as potentially eligible for listing on the National Register. According to the October 19, 2021 Archaeological Report, the survey of the impoundment shoreline did not identify any archaeological sites or artifacts on the shoreline.[75] Based on the information above, there are no known National Register-listed or eligible archaeological resources in the APE.

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[71] 36 C.F.R. § 60.4.

[72] *See* Northern States' December 16, 1991 Final License Application (FERC No. 2587-002) at Exhibit E, Section 1.10.2, *Determination of Eligibility of Project Structures for Inclusion in the National Register of Historic Places.* The evaluation states that while portions of the 1916-1917 dam and powerhouse were present, both had been substantially altered and all the other structures originally associated with them have been replaced with modem equivalents (Heggland, 1989).

[73] Per 36 C.F.R. § 60.4, National Register Criterion A is defined as having an association with events that have made a significant contribution to the broad patterns of our history. Criterion C is defined as possessing the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction. Integrity is assessed on the basis of the presence of the essential physical features that enable a historic property to convey its historic identity (Park Service, 1990).

[74] *See* Northern States' December 16, 1991 License Application (FERC No. 2587-002), at Appendix A.

[75] *See* Northern States' October 19, 2021 *Archaeological Shoreline Monitoring of the Saxon Falls and Superior Falls Hydroelectric Projects Shorelines*, filed with the Commission on December 30, 2022, at Exhibit E, Appendix E-16. At pp. 34 (privileged).

Northern States sought concurrence from the Michigan and Wisconsin SHPOs regarding the APE and potential effect of the project on cultural resources. The Michigan SHPO responded by letter on July 28, 2022, indicating the relicensing of the project would have no adverse effect on historic properties but if additional information is discovered or if the scope of work changes, then the Michigan SHPO would need to further review the proposed relicensing. The Wisconsin SHPO responded by email on August 11, 2022, indicating its concurrence with the findings of the archaeological report, implementation of an HPMP, and stating no historic or cultural sites are currently adversely affected by the reservoir activities.[76]

3.3.6.2 Environmental Effects

Northern States proposes to implement the statewide Programmatic Agreement that was executed by Commission staff and the Wisconsin SHPO on December 16, 1993 (FERC, *et al.*, 1993), which requires that an HPMP be developed to avoid, lessen, or mitigate adverse effects on identified and unidentified historic properties within the APE.

No stakeholders provided specific comments or recommendations for cultural resources in response to the Commission's notice that the application was ready for environmental analysis.

Our Analysis

The APE is the geographic area within which the proposed relicensing may directly or indirectly cause alterations in the character or use of historic properties. The proposed project boundary fully encompasses the geographic area in which the project's relicensing may directly or indirectly cause alterations in the character or use of any historic properties, and there is no justification for including additional land or water in the APE outside of the proposed project boundary. Therefore, the APE should only include the land and water that is enclosed by the proposed project boundary.[77]

Hydropower facilities can affect cultural resources as a result of modifications to project facilities or project operation; project-related ground-disturbing activities; construction, modification, or maintenance of project recreation facilities and use of such facilities by visitors;

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[76] See Northern States' December 30, 2022 Final License Application at Exhibit E, Volume 4, *Documentation of Consultatio*n.

[77] *See* section 3.3.5.2, *Land Use*, for a discussion of project effects related to changes to the project boundary from the current license to the Proposed Action. According to a filing from the Advisory Council, the Commission's jurisdiction over hydroelectric projects does not constitute "federal ownership or control" as meant in federal regulations, and, therefore, surrendering land once within a licensee's project boundary would not result in an adverse effect to historic properties on that land in and of itself. *See* Advisory Council letter filed on May 14, 2024, concerning the draft PA for the Azusa Powerhouse Hydroelectric Project, FERC P-1250-020. https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20240514-5071.

project-induced shoreline erosion;[78] and vandalism. However, Northern States is not proposing any land-disturbing activities, construction, or modifications to project facilities or operation that would adversely affect cultural resources relative to the project as currently licensed. Northern States' proposal to construct a new parking area for six vehicles at a new hand-carry boat take-out site on the eastern shoreline of the impoundment would require ground disturbance during the term of any new license.[79] However, the location has been surveyed for archaeological resources in the past and no National Register listed or eligible properties, or archaeological or historic cultural resources, were identified.[80] Therefore, the proposed construction of the new parking area would not result in adverse effects on archaeological resources.

Northern States' evaluation of project facilities determined that the facilities are not eligible for listing in the National Register because past repairs and modifications to the project resulted in a loss of integrity. Northern States' literature review and archaeological survey in 2021, determined that there are no known National Register-listed or eligible archaeological resources in the APE. The Michigan and Wisconsin SHPOs concurred that relicensing would have no adverse effect on historic properties.

Since there are no known historic properties within the APE and no foreseeable project effects on historic properties, the proposed HPMP is not needed to protect any historic properties during the term of any new license. Staff is not aware of any other project-related benefits of an HPMP.

It is possible that previously unidentified archaeological or cultural resources could be discovered during project operation, maintenance, or other project-related work involving land-disturbing activities. If cultural resources are discovered during such work, Northern States should stop all land-clearing and land-disturbing activities in the vicinity of the resource and consult with the Michigan and Wisconsin SHPOs and Tribes to determine the need for any cultural resource studies or measures. To protect cultural resources from any project modifications not specifically authorized by any new license, Northern States should consult with the Michigan and Wisconsin SHPOs and Tribes prior to implementing such project modifications to determine the effects of the activities and the need for any cultural resource studies or measures.

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[78] Project-induced shoreline erosion does not include shoreline erosion attributable to flood flows or natural phenomena, such as wind-driven wave action, erodible soils, and loss of vegetation due to natural causes.

[79] *See* section 3.3.1.2, *Geology and Soils, Environmental Effects*, for a discussion on the potential effects of the proposed construction on erosion.

[80] *See* Northern States' October 19, 2021, *Archaeological Shoreline Monitoring of the Saxon Falls and Superior Falls Hydroelectric Projects Shorelines,* filed with the Commission on December 30, 2022, at Exhibit E, Appendix E-16 (privileged). See also, Lange-Mueller and Terry, 2016 and Van Dyke, 1991a, 1991b, and 1999.

Tribal Hunting, Fishing, and Gathering

According to Northern States, the project provides pedestrian recreational access for activities such as hunting, bank fishing, hiking, wildlife viewing, sightseeing, on all Northern States-owned lands not fenced for safety or security purposes. Northern States states that no changes to this land use policy are anticipated for any Northern States' lands. In addition to hunting opportunities on Northern States' lands, hunting opportunities are also available in the vicinity of the project along Gogebic County's Powers Road Trail Network[81] located a few miles east of the project, and the Iron County Forest. This forest is the fourth largest county forest in Wisconsin and is comprised of non-contiguous forest sections located to the west of the project.[82] Therefore, ample opportunities exist for hunting and continuing to operate the project as proposed would not affect Tribal hunting relative to current conditions.

There is no information in the record to indicate that Tribes gather plants for food or medicinal purposes at the project. However, there are no barriers that restrict access to project land except those needed for public safety such as fencing at the powerhouse, substation, surge tank, penstocks, and gates/barriers to the dam. Therefore, relicensing the project would not adversely affect Tribal gathering relative to current conditions.

As discussed in section 3.3.5, Northern States is proposing to continue maintaining project facilities that provide opportunities for fishing in the impoundment and tailrace. Therefore, relicensing the project would not adversely affect Tribal fishing relative to current conditions.

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.

4.0 DEVELOPMENTAL ANALYSIS

In this section, we look at the project's use of the Montreal River for hydropower generation to see what effect various proposed or recommended environmental measures would have on the cost to operate and maintain the project and on the project's power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corporation*,[83] the Commission compares the current cost to produce project power to an estimate of the cost to provide the same amount of energy and capacity for the region using the most likely alternative source of power (cost of alternative power). In keeping

[81] *See* Gogebic County, *Hiking and Biking Areas* at https://www.gogebic.gov/residents/parks_and_recreation/biking_areas.php

[82] *See* Iron County Forest & Parks, *About Us* at https://ironcountyforest.org/about/

[83] *See Mead Corp.,* 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.

with the policy described in *Mead Corporation*, our economic analysis is based on current electric power cost conditions and does not anticipate or estimate changes in fuel costs that could occur during a project's license term.

For each of the licensing alternatives, our analysis includes an estimate of: (1) the annualized cost of providing the individual measures considered in the EA; (2) the cost of the most likely alternative source of project power; (3) the total annual project cost (i.e., for construction, operation, maintenance, and environmental measures); and (4) the difference between the cost of the current alternative source of project power and the total annual project cost. If the difference between the cost to produce an equivalent amount of power from an alternative source and the total annual project cost is positive, the project produces power at a cost less than the cost of producing power from the most likely least-cost source of alternative power. If the difference between the alternative source of power's annual cost and the total annual project cost is negative, the project costs more to produce power than the cost to produce an equivalent amount of power from the most likely least-cost source of alternative power. This estimate helps 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.

The power and economic benefits of the project, and the comparison of the cost of each alternative for the project, are discussed in Appendix G*, Developmental Resources*. Appendix H, *Costs of Environmental Measures*, presents the cost of the environmental enhancement measures considered in our analysis.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to the power development purposes and to the purposes of energy conservation; the protection, mitigation of damage to, and enhancement of fish and wildlife; the protection of recreational opportunities; and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. This section contains the basis for, and a summary of, our recommendations for relicensing the project. Appendix I, *Comprehensive Development*, contains the basis for staff's recommendations and the rationale for modifying Northern States' proposal for the project. We weigh the costs and benefits of our recommended alternative against other proposed measures.

Based on our independent review of agency and public comments filed on this project and our evaluation of the environmental and economic effects of the Proposed Action and its alternatives, we selected the Staff Alternative as the preferred alternative for the project. We recommend this alternative because: (1) issuing a new license for the project would allow the applicant to continue operating the project to produce and transmit a dependable source of electrical energy; (2) the 1.65 MW of electric capacity from the project comes from a renewable resource that does not contribute to atmospheric pollution; (3) the public benefits of the Staff Alternative would exceed those of the No-Action Alternative; and (4) the recommended measures would protect and enhance aquatic, terrestrial, recreation, and cultural resources, and federally listed species.

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

5.1.1 Measures Proposed by the Applicant

Based on our environmental analysis of Northern States' proposal in section 3.0, *Environmental Analysis*, and the costs discussed in section 4.0, *Developmental Analysis*, we conclude that the following operation and environmental measures proposed by Northern States would protect and enhance environmental resources and would be worth the cost. Therefore, we recommend including the following measures in any new license issued for the project.

- Implement soil erosion and sediment control BMPs prior to any ground-disturbing activities.
- To protect aquatic resources, continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given time and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet.
- To protect fish from impingement and entrainment, continue to maintain the existing trashrack with 1-inch clear bar spacing at the turbine intake.
- Notify the Commission and resource agencies of planned and unplanned deviations (e.g., impoundment drawdowns), and only modify project operation for short periods of time of up to 3 weeks, after mutual agreement with FWS, Michigan DNR, Michigan EGLE, and Wisconsin DNR.
- Develop an operation compliance monitoring plan to document compliance with project operation that includes the following provisions: (1) locations of headwater monitoring probes/gages; (2) frequency of monitoring; (3) procedures for maintaining and calibrating monitoring equipment; (4) standard operating procedures to be implemented outside of normal operating conditions, such as scheduled or emergency facility shutdowns or maintenance activities; (5) a schedule for installing and operating the monitoring equipment; and (6) notification procedures for planned and unplanned deviations.
- To protect the monarch butterfly, conduct vegetation management within the penstock and transmission line corridors between October 1 and April 30.
- To protect bald eagles at the project, prior to any construction, maintenance, or vegetation management activities, identify any existing eagle nests at the project by reviewing the Wisconsin NHI, establish a buffer zone of at least 660 feet between any nest and the project activity, and schedule any project activity that would be within 660 feet of any eagle nests to occur outside of the eagle nesting season, i.e., between August 1 and January 15.

- Continue to maintain the recreation access trail, scenic overlook, tailrace fishing site, parking area, and portable toilet, and maintain the new eastern take-out site.
- Continue releasing a minimum aesthetic flow of 8 cfs or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15, and continue releasing a minimum aesthetic flow of 20 cfs or inflow, whichever is less, to the bypassed reach from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period.

5.1.2 Additional Measures Recommended by Staff

Under the Staff Alternative, the project would be operated with Northern States' proposed measures identified above, and the following staff-recommended measures and or modifications. We discuss the basis for the staff-recommended measures and the rationale for modifying Northern States' proposal in Appendix I, *Comprehensive Development*.

- To protect the federally listed endangered NLEB, avoid the removal of non-hazardous trees that are 3 inches dbh or greater in diameter from April 15 through September 30, instead of Northern States' proposal to implement Wisconsin DNR's BITP/A and restrict the removal of trees greater than 3 inches dbh from June 1 through July 31.
- To enhance recreation at the project, develop a recreation management plan that contains the following provisions: (1) a description of all licensed project recreation facilities, including a map, and associated informational, safety, and Part 8 signage; (2) a description of operation and maintenance of the licensed project recreation facilities; and (3) a schedule for completing all required recreation improvements.
- To improve recreation access, include a map of the licensed project recreation facilities on Part 8 signage.
- To protect previously unidentified cultural resources that are discovered during project operation, maintenance, or other project-related work involving land-disturbing activities, stop all land-clearing and land-disturbing activities in the vicinity of the resources and consult with the Michigan SHPO, Wisconsin SHPO, and Tribes to determine the need for any cultural resource studies or measures.
- To protect cultural resources from any project modifications not specifically authorized by any new license, consult with the Michigan SHPO, Wisconsin SHPO, and Tribes prior to implementing such project modifications, to determine the effects of the activities and the need for any cultural resource studies or measures.

5.1.3 Conclusion

Based on our review of the agency and public comments filed for the project and our independent analysis pursuant to sections 4(e), 10(a)(1), and 10(a)(2) of the FPA, we conclude that licensing the project, as proposed by Northern States with the additional staff-recommended measures and modifications, would be best adapted to a plan for improving the Montreal River Basin.

5.2 UNAVOIDABLE ADVERSE EFFECTS

Continued operation of the project would result in ongoing resident fish mortality due to entrainment. However, our analysis in section 3.3.2.2, *Fish Impingement and Entrainment*, indicates that the level of entrainment mortality would not significantly affect resident fish populations in the impoundment.

5.3 FISH AND WILDLIFE AGENCY RECOMMENDATIONS

Under the provisions of section 10(j) of the FPA, a 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 finds 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 must attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of the agency.

In response to our October 10, 2024 REA notice, Interior timely filed 3 recommendations under section 10(j) on December 9, 2024, and Michigan DNR timely filed 12 recommendations under section 10(j) on the same date. Appendix J, *Fish and Wildlife Agency Section 10(j) Recommendations*, lists the recommendations filed pursuant to section 10(j) for the project. Appendix J also indicates whether the recommendations are included under the Staff Alternative, as well as the basis for our preliminary determinations concerning measures that we consider inconsistent with the FPA.

5.4 CONSISTENCY WITH COMPREHENSIVE PLANS

Section 10(a)(2)(A) of the FPA[84] 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 23 qualifying comprehensive plans that are applicable to the project. The comprehensive plans identified for this project are presented as Appendix K. No inconsistencies were found.

6.0 FINDING OF NO SIGNIFICANT IMPACT

If the project is relicensed as proposed, with the additional staff-recommended measures and modifications, the project would continue to operate as it does today, while providing protection and enhancements for aquatic, terrestrial, recreation, and cultural resources, and federally listed endangered species in the project area.

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

[84] 16 U.S.C. § 803(a)(2)(A).

7.0 LITERATURE CITED

The literature cited in this EA is presented as Appendix L.

8.0 LIST OF PREPARERS

The list of preparers of this EA is presented as Appendix M.

APPENDIX A

GLOSSARY OF TERMS

Archaeological resources: The material remains of past human activity, including, but not limited to: man-made or modified objects; refuse left through human occupation and consumption; and earthworks and structural ruins associated with past human activity or occupation.

Architectural resources: Extant structures or infrastructure that may retain importance based on physical aspects of design, materials, form, style, or workmanship.

Area of Potential Effect (APE): The geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties.

Burst Swim Speed: The fastest swimming speed that can be maintained for 20 seconds.

Capacity benefit: The benefit a project receives for providing capacity to the grid, which may be in the form of a dependable capacity credit or credit for monthly capacity provided.

Diameter at breast height: The diameter of a tree as measured about 4 to 4.5 feet above the ground.

Dissolved oxygen (DO): One of the most commonly employed measures of water quality, DO is the amount of gaseous oxygen in a liquid. Low DO levels can adversely affect fish and other aquatic life. In this document, DO is expressed in units of milligrams per liter (mg/L).

Hibernaculum: A place where a bat hibernates over the winter, such as in a cave.

Historic District: A geographically definable area, urban or rural, that possesses concentration, linkage or continuity of sites, buildings structures, or objects united by past events or aesthetically by plan or physical development (Park Service, 1990).

Historic Properties: Properties that are eligible for listing or listed on the National Register of Historic Places.

National Register of Historic Places (National Register): A catalog of America's significant districts, sites, buildings, structures, and objects related to architecture, archeology, engineering, and culture.

New license: Any license, except an annual license issued under section 15 of the Federal Power Act, for a waterpower project that is issued under the Federal Power Act after the initial license for that project. 18 C.F.R. § 4.30(b)(19).

Pup season: Timeframe during late pregnancy and when most young are born until they can fly and forage independently.

Tree removal: cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by the northern long-eared.

Undertaking: 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. *See* 36 C.F.R. § 800.16. For purposes of this National Environmental Policy Act (NEPA) document, the undertaking is the potential issuance of a new license for the Superior Project.

White-nose syndrome: A fungal infection that agitates hibernating bats, causing them to rouse prematurely and burn fat supplies. Mortality results from starvation or, in some cases, exposure.

APPENDIX B

FIGURES

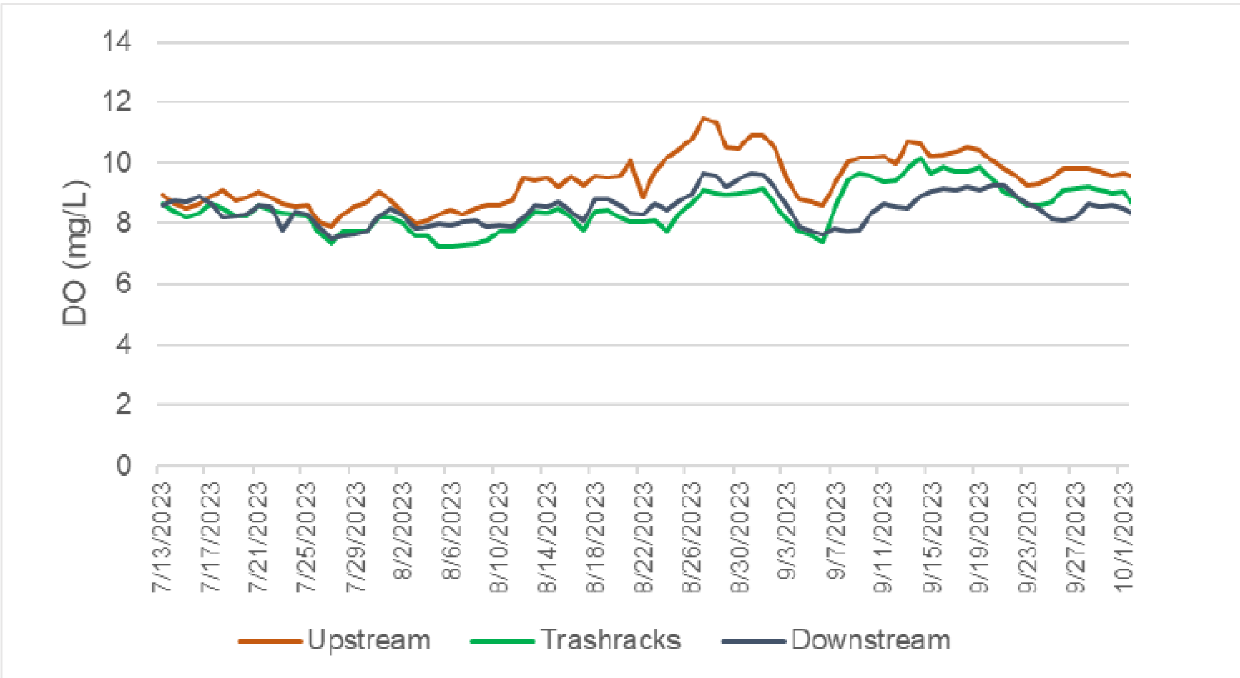

Figure B-1. Average daily dissolved oxygen concentrations at the project. (Source: Northern States).

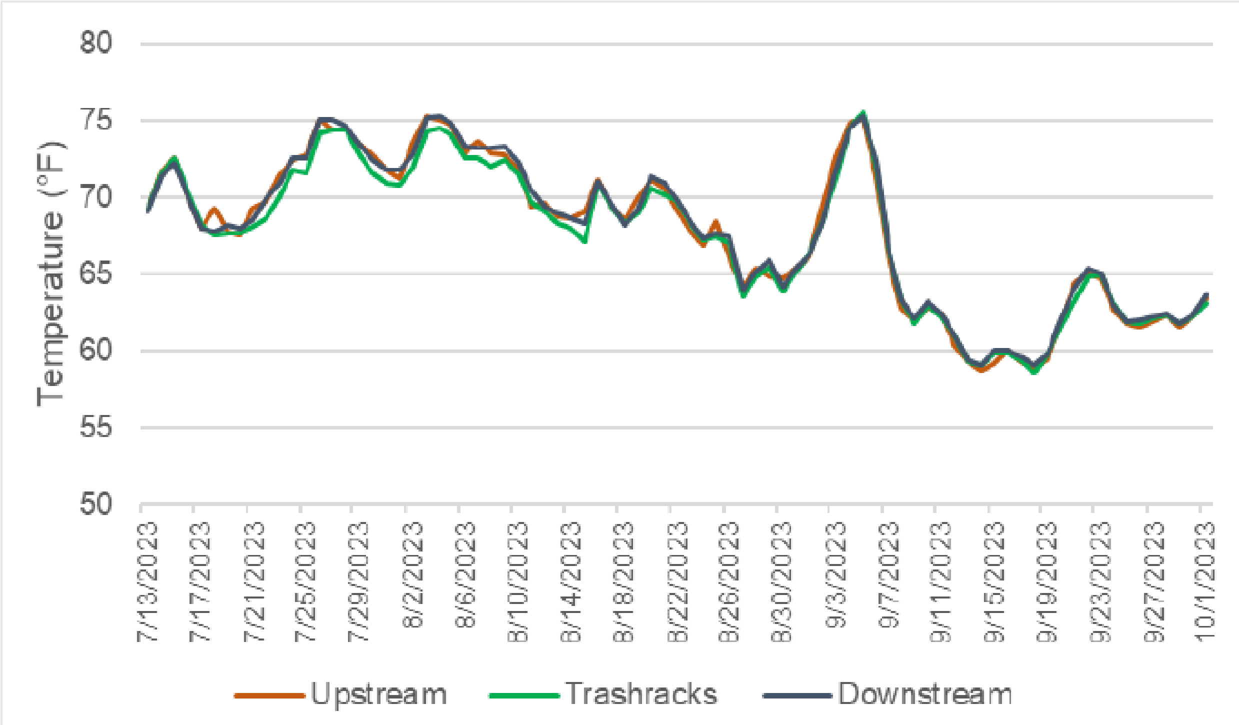

Figure B-2. Average daily water temperature (Source: Northern States).

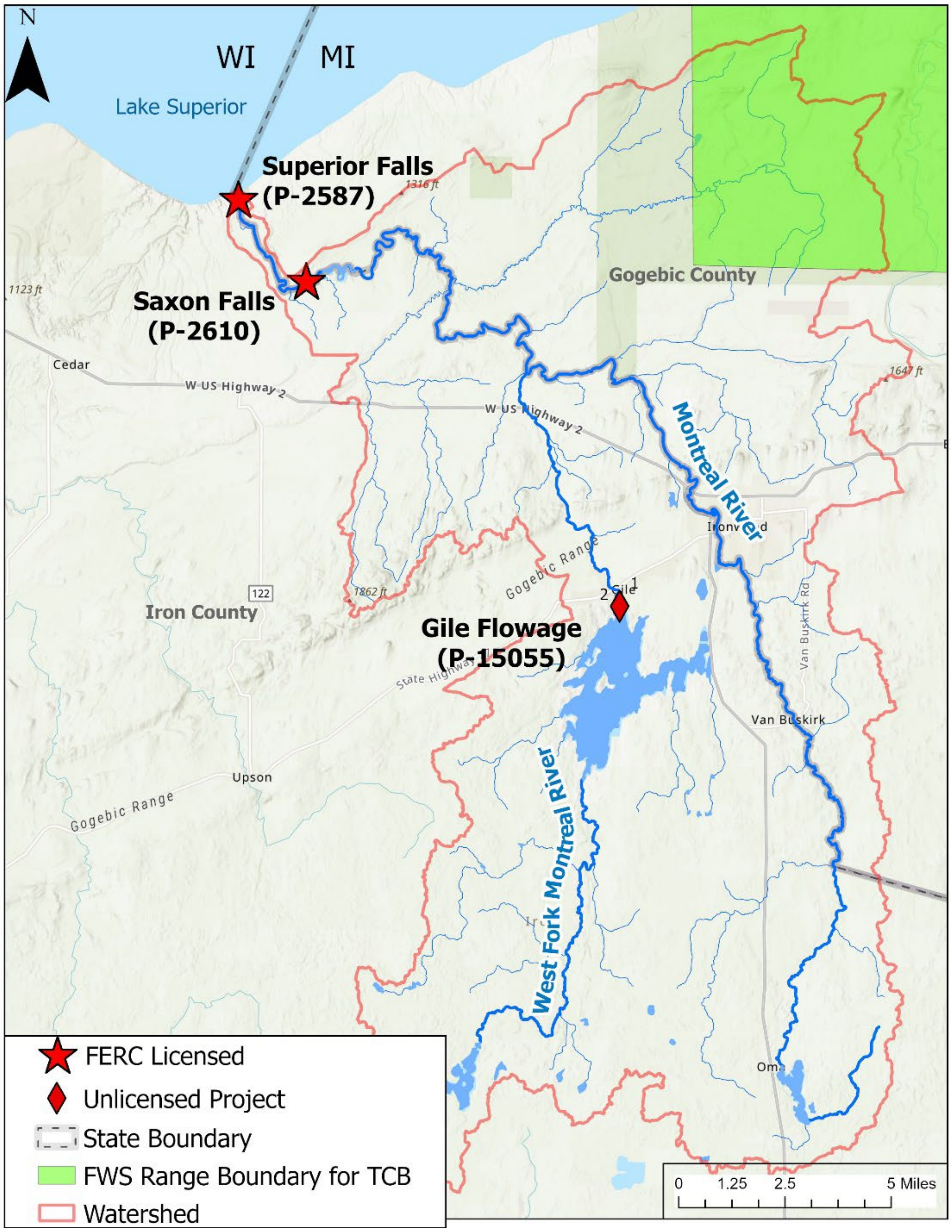

Figure B-3. FWS range boundary for the tricolored bat in the project vicinity (Source: FWS, 2024a, as modified by Staff).

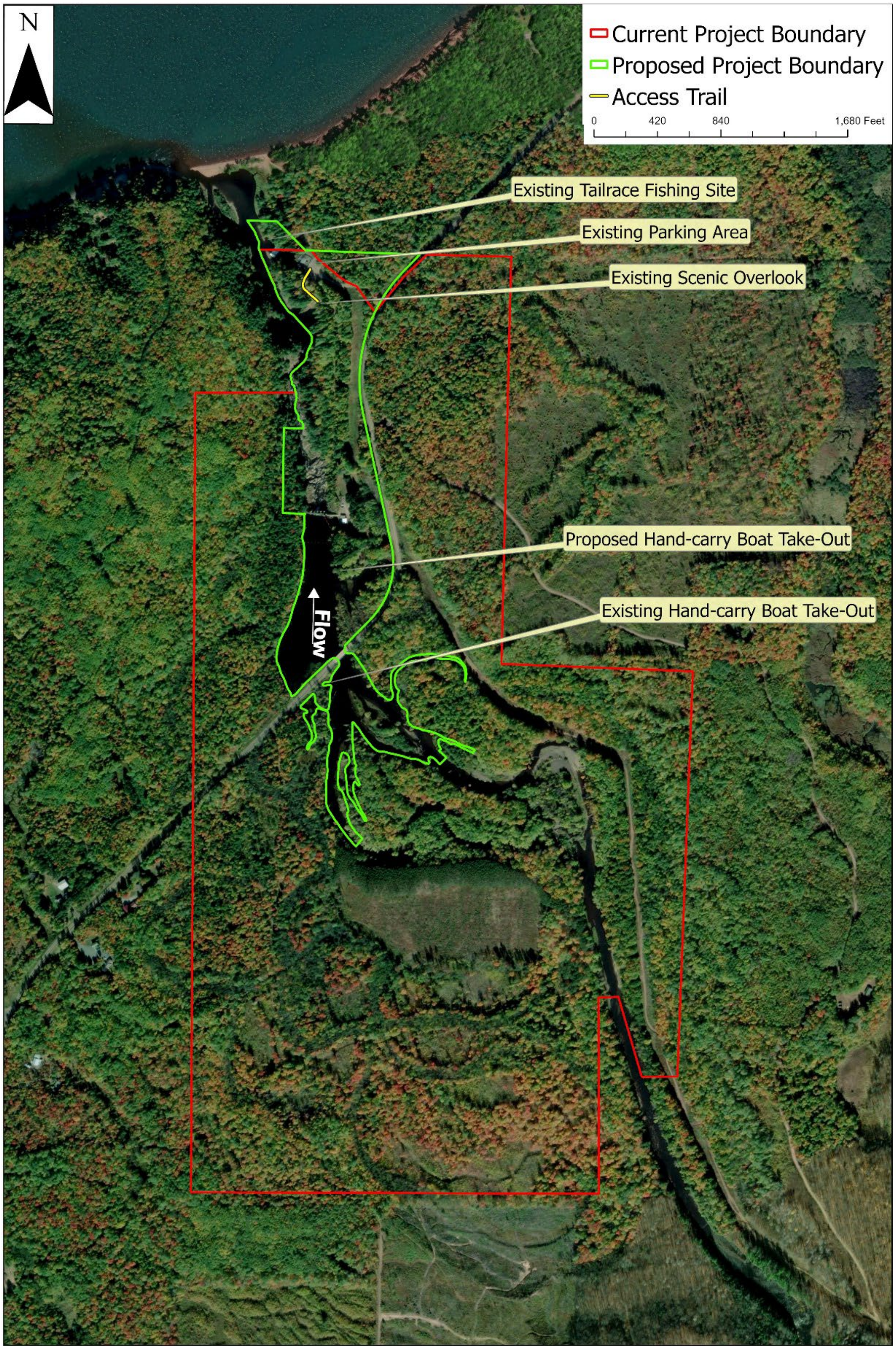

Figure B-4. Project recreation facilities (Source: Staff).

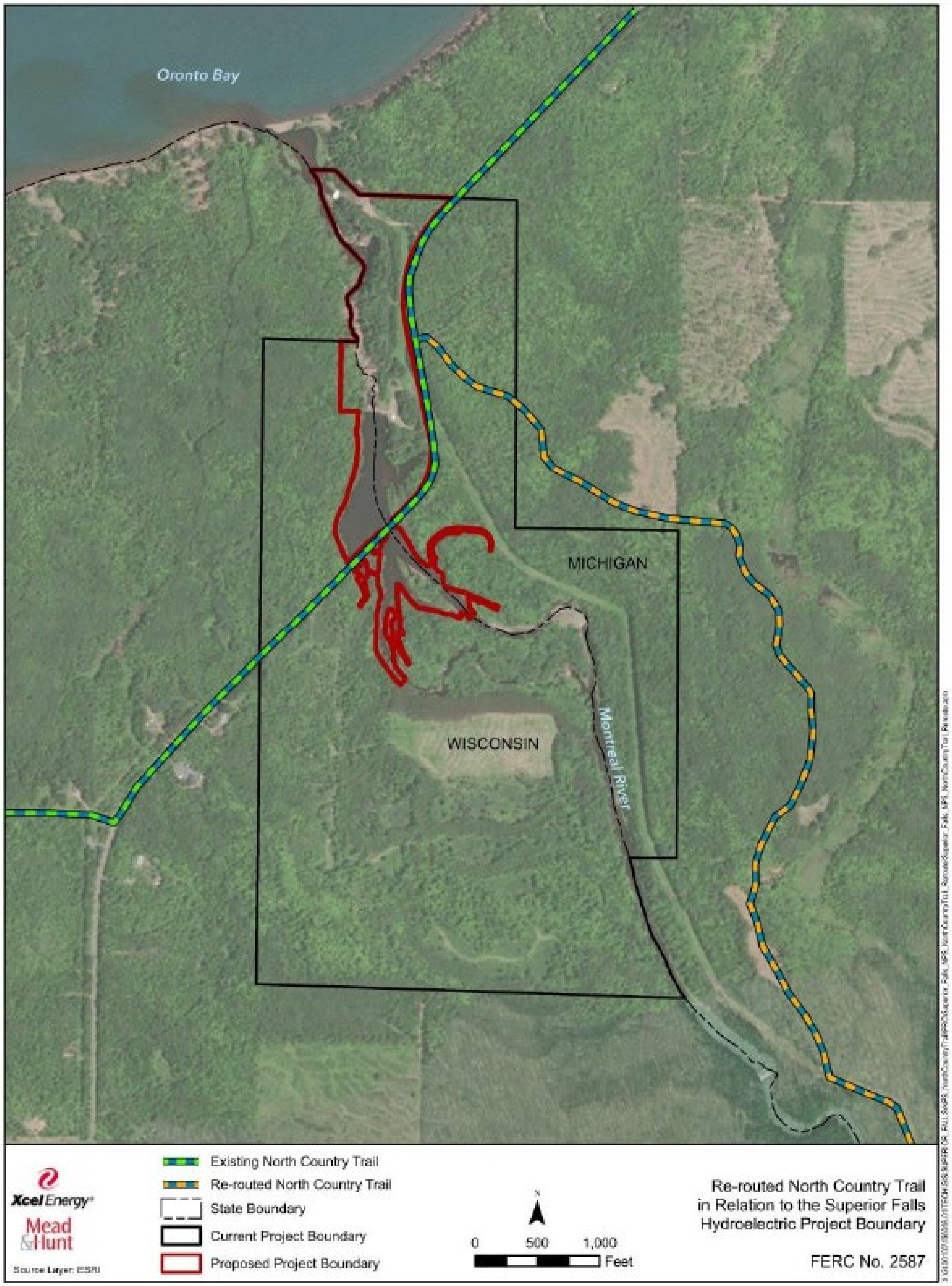

Figure B-5. North Country National Scenic Trail in the vicinity of the project (Source: Northern States).

APPENDIX C

TABLES

Table C-1. River flows (in cubic feet per second) by month for the Superior Project, from 1986 to 2021 (Source: Northern States, as modified by Staff).

Month	10% Exceedance Flow	Median Flow	90% Exceedance Flow
January	222	168	90
February	247	168	88
March	877	210	96
April	2,287	633	200
May	1,108	262	171
June	534	202	114
July	343	171	91
August	262	121	65
September	272	101	50
October	433	155	65
November	433	190	91
December	302	168	88
Annual	605	186	81

Table C-2. Wisconsin and Michigan water quality standards for temperature and dissolved oxygen (DO) (Source: Northern States, as modified by Staff).

		Wisconsin		Michigan	
Location	Month	Temperature (°F)	DO (mg/L)	Temperature (°F)	DO (mg/L)
Upstream of the impoundment	July	85.0	5.0	68.0	7.0
	August	84.0	5.0	68.0	7.0
	September	82.0	5.0	63.0	7.0
Impoundment at the trashrack	July	86.0	5.0	83.0	5.0
	August	86.0	5.0	81.0	5.0
	September	84.0	5.0	74.0	5.0
Downstream of the dam	July	85.0	5.0	68.0	7.0
	August	84.0	5.0	68.0	7.0
	September	82.0	5.0	63.0	7.0

Table C-3. Fish species collected in the Superior Project impoundment (Source: Northern States, as modified by Staff).

Common Name	Scientific Name	Total Collected
White Sucker	*Catostomus commersonii*	766
Common Shiner	*Luxilus cornutus*	672
Hornyhead Chub	*Nocomis biguttatus*	149
Rock Bass	*Ambloplites rupestris*	97
Creek Chub	*Semotilus atromaculatus*	71
Black Bullhead	*Ameiurus melas*	55
Pumpkinseed	*Lepomis gibbosus*	39
Johnny Darter	*Etheostoma nigrum*	24
Logperch	*Percina caprodes*	17
Central Mudminnow	*Umbra limi*	15
Western Blacknose Dace	*Rhinichthys obtusus*	10
Yellow Perch	*Perea jlavecens*	10
Longnose Dace	*Rhinichthys cataractae*	8
Blacknose Shiner	*Notropis heterolepis*	5
Black Crappie	*Pomoxis nigromaculatus*	4
Smallmouth Bass	*Micropterus dolomieu*	4
Redside Dace	*Clinostomus elongatus*	3
Mottled Sculpin	*Cottus bairdii*	3
Muskellunge	*Esox masquinongy*	1
Walleye	*Sander vitreus*	1

APPENDIX D

STATUTORY AND REGULATORY REQUIREMENTS

Federal Power Act

Section 18 Fishway Prescriptions

Section 18 of the Federal Power Act (FPA), 16 U.S.C. § 811, states that the Commission must require 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). No fishway prescriptions or reservations of authority were filed.

Section 10(a) Recommendations

Under section 10(a) of the FPA, 16 U.S.C. § 803(a)(1), each hydroelectric license issued by the Commission must be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce; for the improvement and utilization of waterpower development; for the adequate protection, mitigation, and enhancement of fish and wildlife; and for other beneficial public uses, including irrigation, flood control, water supply, recreation, and other purposes.

On December 6, 2024, Michigan Hydro Relicensing Coalition timely filed 5 recommendations under section 10(a). On December 9, 2024, Interior; Michigan Department of Natural Resources (Michigan DNR); Michigan Department of Environment, Great Lakes, and Energy (Michigan EGLE); American Whitewater; and River Alliance of Wisconsin, timely filed 5, 3, 3, 1, and 11 recommendations under section 10(a), respectively. We discuss these section 10(a) recommendations in section 3.3, *Proposed Action and Action Alternatives*, and Appendix I, *Comprehensive Development*.

Section 10(j) Recommendations

Under section 10(j) of the FPA, 16 U.S.C. § 803(j)(1), 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 in any new license 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 December 9, 2024, Interior timely filed 3 recommendations, and Michigan DNR timely filed 12 recommendations pursuant to section 10(j). We summarize these recommendations in Appendix J, *Fish and Wildlife Agency Section 10(j) Recommendations* and discuss them in Appendix I, *Comprehensive Development*.

Clean Water Act

Under section 401(a)(1) of the Clean Water Act (CWA), 33 U.S.C. § 1341(a)(1), a license applicant must obtain either a water quality certification (certification) from the appropriate certifying authority verifying that any discharge from a project would comply with applicable provisions of the CWA or a waiver of such certification by the appropriate certifying authority. A waiver occurs if the certifying authority does not act on a request for certification within a reasonable period of time, not to exceed 1 year, after receipt of such request.

On December 4, 2024, Northern States applied to the Wisconsin Department of Natural Resources (Wisconsin DNR) for a section 401 certification for the project. Wisconsin DNR received the application on the same day. On August 20, 2025, Commission staff issued a notice pursuant to 40 C.F.R. § 121.6 and section 4.34(b)(5) of the Commission's regulations, notifying Wisconsin DNR that the reasonable period of time to act on the certification request is 1 year, and if Wisconsin DNR fails or refuses to act on the request by December 4, 2025, then the agency's certifying authority would be deemed waived pursuant to section 401 of the CWA. Wisconsin DNR has yet to act on the certification request.

On December 6, 2024, Northern States applied to Michigan EGLE for a section 401 certification for the project. Michigan EGLE received the application on the same day. On December 31, 2024, Commission staff issued a notice pursuant to 40 C.F.R. § 121.6 and section 4.34(b)(5) of the Commission's regulations, notifying the Michigan EGLE that the reasonable period of time to act on the certification request is 1 year, and if Michigan EGLE fails or refuses to act on the request by December 6, 2025, then the agency's certifying authority would be deemed waived pursuant to section 401 of the CWA. Michigan EGLE has yet to act on the certification request.

In its letter dated December 9, 2024, Michigan DNR filed a recommendation pursuant to section 10(j), stating that the NEPA document must summarize and incorporate Michigan EGLE's certification conditions and commit the licensee to adhering to the conditions as part of any license issued. Michigan EGLE has not issued a certification for the project; therefore, this EA does not analyze any conditions associated with the certification. Section 401(d) of the CWA provides that any certification shall become a condition of any federal license that authorizes construction or operation of a project.

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. According to the U.S. Fish and Wildlife Service's (FWS) Information for Planning and Consultation (IPaC) system, the federally listed endangered gray wolf (*Canis lupus*), endangered northern long-eared bat (NLEB; *Myotis septentrionalis*), endangered piping plover (*Charadrius melodus*), threatened Canada lynx (*Lynx canadensis*), and threatened rufa red knot (*Calidris canutus rufa*), and the proposed threatened monarch butterfly

(*Danaus plexippus*) have the potential to occur at the project.[85] No critical habitat for these species occurs within lands affected by the project.

Although IPaC initially stated that the federally proposed endangered tricolored bat (TCB; *Perimyotis subflavus*) has the potential to occur at the project,[86] the most recent IPaC list does not include these species.[87]

Our analyses of project effects on federally listed and proposed species are presented in Appendix E, *Biological Assessment.* Based on the available information, we conclude that relicensing the project would: (1) have no effect on the gray wolf, Canada lynx, piping plover, or rufa red knot; (2) not likely adversely affect the NLEB; and (3) not likely jeopardize the continued existence of the TCB or monarch butterfly.

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 CZMA 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.

Michigan EGLE is the state agency responsible for administering the state's CZMA program. On April 21, 2022, Northern States submitted a request to Michigan EGLE's Water Resource Division to determine whether the Superior Project is consistent with the state's CZMA Program.[88] On June 15, 2022, Michigan EGLE determined that the project is within Michigan's coastal management boundary and is subject to consistency requirements. Michigan EGLE states that relicensing the project is consistent with the state's CZMA Program, provided that Northern States complies with all required permits.

The Wisconsin Department of Administration (Wisconsin DOA) is the state agency responsible for administering the state's CZMA program. On April 15, 2022, Northern States submitted a request to Wisconsin DOA's Coastal Management Program to determine whether

[85] *See* Commission staff's September 30, 2025 Memorandum on Endangered Species Act List.

[86] *See* Commission staff's August 14, 2023 Memorandum on List of Threatened, Endangered, Candidate, and Proposed Species.

[87] *See* Commission staff's September 30, 2025 Memorandum on Endangered Species Act List.

[88] *See* Northern States' Final License Application at Volume 4, Documentation of Consultation, *Coastal Management Zone Coordination Correspondence*.

the Saxon Project is consistent with the state's CZMA program.[89] Wisconsin DOA did not respond to Northern States. Because Wisconsin DOA did not respond within 180 days of its receipt of the consistency certification, Wisconsin DOA's concurrence with Northern States' CZMA certification is presumed.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108, requires that every federal agency "take into account" how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

In a notice issued on February 13, 2020, Commission staff designated Northern States as its non-federal representative for the purposes of conducting section 106 consultation under the NHPA. Pursuant to section 106, and as the Commission's designated non-federal representative, Northern States consulted with the Wisconsin and Michigan State Historic Preservation Officers (SHPO)s, and potentially affected Tribes, to identify historic properties, determine National Register eligibility, and assess potential adverse effects on historic properties within the project's area of potential effects.[90]

Northern States sought concurrence from the Michigan and Wisconsin SHPOs regarding the area of potential effects, the potential effect of the project on cultural resources, and its proposal to implement a historic properties management plan (HPMP). The Michigan SHPO responded by letter on July 28, 2022, indicating that the relicensing of the project would have no adverse effect on historic properties, but that if additional information is discovered or if the scope of work changes, then the Michigan SHPO would need to conduct a further review.[91] The Wisconsin SHPO responded by email on August 11, 2022, indicating its concurrence with the findings of the archaeological report, implementation of an HPMP, and stating no historic or cultural sites are currently adversely affected by the reservoir activities.[92]

Our analysis presented in section 3.3.6.2, *Cultural Resources,* concludes that relicensing the project would not adversely affect historic properties. Therefore, the Commission's requirements pertaining to section 106 of the NHPA have been satisfied.

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[89] *Id*.

[90] *See* Commission staff's February 13, 2020 *Notice of Intent to File License Application and Request to Use the Traditional Licensing Process* at para. k.

[91] *See* Northern States' December 30, 2022 Final License Application at Exhibit E, Volume 4, *Documentation of Consultatio*n.

[92] *Id.* at Appendix B-258.

APPENDIX E

BIOLOGICAL ASSESSMENT

Affected Environment

Gray Wolf

The gray wolf is federally listed as endangered in most of the lower 48 contiguous states.[93] The gray wolf is listed as threatened in Wisconsin and endangered in all or part of 44 other states. The gray wolf was delisted by FWS, effective January 4, 2021, but the delisting rule was vacated by federal court on February 10, 2022. Gray wolves are the largest member of the canid family with adults weighing 40 to 80 pounds. They are predominantly gray or black and have a broader muzzle than coyotes. Gray wolves have a narrow chest and typically measure 5 to 6 feet in length (Wisconsin DNR, 2024).

This highly adaptable species can exist in a variety of habitats provided they have access to sufficient prey. Gray wolves can thrive in range habitats from temperate forests to grasslands and deserts, which reflects their adaptability as a species. Prey includes medium and large hooved mammals, such as white-tailed deer. Once established, packs are very resilient barring human-caused mortality. Gray wolves are endangered mostly due to negative human encounters that lead to mortality, injury, and disease. Habitat loss and fragmentation create a greater likelihood that wolves will encounter humans, domestic animals, and various human infrastructure (Wisconsin DNR, 2024). These encounters can result in wolves being shot intentionally by unauthorized individuals, hit by vehicles, being controlled by government agents after becoming involved in depredations on domestic animals, being trapped or shot accidentally, or contracting diseases from domestic dogs. Fragmentation of habitat, with resulting areas becoming too small for populations with long-term viability, is a threat in areas around human population centers.

Critical habitat for the gray wolf has been designated in Michigan and Minnesota (FWS, 2024a). However, no critical habitat for this species has been designated within the project vicinity.

Canada Lynx

The Canada lynx was listed as threatened on March 24, 2000.[94] In the United States, the southern-most extent of the lynx's range occurs in the Northeast, western Great Lakes region, northern and southern Rockies, and northern Cascades.

Canada lynx is uncommon in Wisconsin. There are no known established populations of lynx in Wisconsin, although lynx are thought to cross into Wisconsin from Canada

[93] 43 Fed. Reg. 9,607-9615 (Mar. 9, 1978).

[94] 65 Fed. Reg. 16,053 (Mar. 24, 2000).

periodically.[95] Its habitat includes large areas of young, dense stands of spruce and fir, approximately 12 to 30 years old, which have dense understory vegetation that support abundant snowshoe hares. Areas of prime habitat shift with time as stands mature and new areas of growth are opened up by disturbance. Populations of snowshoe hare have a direct effect on lynx populations that fluctuate in response to prey availability. No critical habitat for this species has been designated within the project vicinity (FWS, 2024b).

Northern Long-Eared Bat

The northern long-eared bat (NLEB) was listed as threatened on May 4, 2015,[96] and reclassified as endangered on November 29, 2022,[97] with an effective date of March 31, 2023.[98] No critical habitat has been designated for this species.

The NLEB is a medium-sized bat species with a body length of 3 to 3.7 inches, wingspan of 9 to 10 inches, and longer ears than other species in the *Myotis* genus (FWS, 2023a). The species ranges across 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 NLEB is insectivorous and 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 that are equal to or greater than 3 inches in diameter at breast height (dbh). In the fall season, NLEBs leave their forest habitats to hibernate in caves, mines, and similar habitat. The bats arrive at hibernacula between August and September, enter hibernation between October and November, and emerge between March and April. During the winter, small groups typically hibernate in cracks and crevices in the walls or ceilings of caves or abandoned mines with high humidity, cool temperatures, and no air currents, although hibernation has also been observed in buildings, railroad tunnels, and other man-made structures.

Hibernacula and surrounding forest habitats play important roles in the life cycle of the species, beyond the time when bats are overwintering, including for fall-swarming[99] and spring-

[95] *See* Wisconsin DNR's Furbearers webpage (https://dnr.wi.gov/topic/wildlifehabitat/furbearers.html), last accessed by staff on September 5, 2025.

[96] 80 Fed. Reg. 17,974 (Apr. 2, 2015).

[97] 87 Fed. Reg. 73,488 (Nov.30, 2022).

[98] 88 Fed. Reg. 4,908 (Jan. 26, 2023).

[99] Fall-swarming occurs between summer and winter hibernation and provides opportunities for the introduction of juveniles to potential hibernacula, copulation, and gathering at stop-over sites on migratory pathways between summer and winter regions.

staging[100] activities. Reproduction is limited to one pup per year in late spring and, therefore, populations can be slow to rebound from anthropogenic and naturally occurring mortality events. The primary threat to this species is white-nose syndrome,[101] which was first observed in New York state in 2006 and has since spread beyond the Northeast and into the Midwest and Southeast (FWS, 2023a). Other threats include impacts to hibernacula and loss or degradation of summer habitat.

The project is located in Iron County, Wisconsin and Gogebic County, Michigan, which are designated as counties with known hibernacula infected white-nose syndrome (FWS, 2020). Although there is no documentation of NLEB at the project, and no known NLEB hibernacula sites occur within 0.25 mile of the project, upland and riparian forest at the project may provide suitable habitat for NLEB summer roosting and foraging activities.

Piping Plover

The piping plover is federally listed as endangered.[102] The piping plover is a small, stocky shorebird, possessing sand-colored plumage and orange legs. Adults are approximately 7 inches long, with a 15-inch wingspan. During the breeding season, adults have a black forehead, a black breast band, and an orange bill. Piping plovers use broad, sandy beaches with low vegetative cover as nesting habitat. Piping plovers are migratory and arrive at shoreline breeding sites at the Great Lakes in April and early May. Egg-laying often begins the second or third week in May, with female piping plovers laying three to five eggs. The incubation period lasts about a month. Young chicks are precocial and leave the nest almost immediately, though many adult males will stay with the chicks until they fledge, about 28 days later. Departure from breeding sites by both adults and young is typically complete by early August. Although the specific diet and foraging habits of piping plovers is largely unknown, based on available information, piping plovers likely consume littoral-dwelling invertebrates, including crustaceans, mollusks, and marine worms. The decline in piping plover populations has been attributed to habitat loss and degradation, nest disturbance, and predation; coastal beaches traditionally used by piping plovers for nesting have been lost to commercial, residential, and recreational developments (FWS, 2018).

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[100] Spring-staging occurs between winter hibernation and migration to summer habitat and allows bats to gradually emerge from hibernation and exit hibernacula to feed and then re-enter the same or alternative hibernacula to resume daily bouts of torpor (i.e., a state of mental or physical inactivity).

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

[102] 50 Fed. Reg. 50,726 (Dec. 11, 1985).

The species is not known to occur in Iron County, Wisconsin (Wisconsin DNR, undated) or in Gogebic County, Michigan.[103]

Rufa Red Knot

The rufa red knot is federally listed as threatened.[104] The red knot is a small shorebird, about 9 inches long with a 20-inch wingspan. Plumage alternates between a mottled gray during the winter months to a cinnamon brown color during the summer breeding season. Though the majority of the red knot population uses the Atlantic flyway during its migration northward, some migrants are known to forage along shoreline tributaries to the Mississippi River and the Great Lakes.

Each year the rufa subspecies population migrates from its winter habitat in Terra del Fuego, the Caribbean, and from the southern reaches of the United States to the northern reaches of the Canadian arctic, making its migration route one of the longest in the western hemisphere. Preferred migration habitat includes muddy or sandy coastal areas, specifically, bays and estuaries, tidal flats, and unimproved tidal inlets (FWS, undated a). Available information suggests that rufa red knots use inland saline lakes as stopover habitat in the Northern Great Plains. There is little information to indicate whether or not red knots may also use inland freshwater habitats during migration, but data suggest that certain freshwater areas (e.g., wetlands, riverine sandbars) may warrant further study as potential stopover habitats. Available data indicate that small numbers of rufa red knots sometimes use manmade freshwater habitats (e.g., impoundments) along inland migration routes.

Forage for the species commonly consists of clams, mussels, snails and other macroinvertebrates. During its 9,300-mile-long migration, its diet is comprised of more readily digestible foods such as insects and horseshoe crab eggs, with the horseshoe crab eggs becoming an essential component for providing staple nourishment during its long migration. The rapid decline of the red knot has been associated with loss of habitat from increased coastal development, and more recently, a loss of its important food source caused by increased commercial overharvesting of horseshoe crabs in Delaware Bay (FWS, 2023b).

Although there is no documentation of the rufa red knot at the project, the project is located within the range of the rufa red knot during its migration.

Tricolored Bat

On September 14, 2022, FWS proposed to list the tricolored bat (TCB) as endangered,[105] based on the range-wide impacts of white-nose syndrome that have caused estimated declines of

[103] See Michigan State University's Michigan Natural Features Inventory. https://mnfi.anr.msu.edu/species/description/10978/Charadrius-melodus. Accessed September 20, 2025.

[104] 79 Fed. Reg. 73,706 (Dec. 11, 2014).

[105] 87 Fed. Reg. 56,381 (Sep. 14, 2022).

more than 90% in affected colonies. TCB are known to occur in 39 states, including Wisconsin and Michigan (FWS, Undated(a)). No critical habitat is being designated because current or threatened destruction, modification, or curtailment of the species' habitat or range is not having large range-wide effects on the species.

Male and female TCB converge at cave and mine entrances between mid-August and mid-October to swarm and mate. During the winter, TCB hibernate in caves and mines, although in some areas where caves are sparse, TCB may hibernate in road-associated culverts and sometimes in tree cavities and abandoned water wells.

During the spring, summer, and fall (i.e., non-hibernating seasons), TCB disperse and primarily roost in foliage of live or recently dead deciduous hardwood trees. Female TCB exhibit high site fidelity, returning year after year to the same summer roosting locations. Female TCB form maternity colonies and switch roost trees regularly (e.g., between 1.2 days and 7 days at roost trees in Indiana). Females typically give birth to two pups between May and July. Limited reproductive potential severely limits the ability of bat populations to respond quickly to perturbations.

Upland and riparian forest at the project may provide suitable habitat for TCB summer roosting and foraging activities.

Monarch Butterfly

On December 12, 2024, FWS proposed to list the monarch butterfly as a threatened species.[106] Adult monarch butterflies rely on diverse food sources during breeding and migration, including milkweed species and nectar-rich flowers. Monarch butterflies are also dependent on milkweed species as host plants during egg-laying and larval development. In eastern North America, the monarch butterfly migrates between Mexico and Canada over a period of two to three successive generations. In Wisconsin and Michigan, the monarch butterfly may be present during the summer months (FWS, 2021).

The project is located within the range of the monarch butterfly. Although there is no documentation of the monarch butterfly at the project, milkweed plants that provide suitable habitat for monarch butterfly reproduction and foraging could potentially occur within the project boundary. Northern States states that 0.3 acre of suitable habitat for monarch butterfly occurs along the penstocks and transmission line.

[106] 89 Fed. Reg. 100,622 (Dec. 12, 2024).

Environmental Effects

Gray Wolf

Northern States does not propose any measures for the protection of the gray wolf, and no agency recommendations were received regarding the gray wolf.

Our Analysis

Wisconsin DNR actively monitors gray wolf populations in the state and reported that in 2022-2023 there were 23 confirmed gray wolf sightings and an estimated 360 individuals in zone 1 (including portions of the 8 northwestern-most Wisconsin counties and most of Iron County) (Wisconsin DNR, 2024). Michigan DNR reports that the wolf population in the Upper Peninsula has remained stable (618 to 695 individuals) since 2011, and that a minimum of 695 estimated wolves occurred on the UP mainland during the winter of 2020. A male wolf was captured and tagged in Gogebic County in 1999 (Michigan DNR, 2022). There is no documentation of gray wolf at the project. Forested areas that could provide suitable habitat for the gray wolf are present at the project and prey species are common to the area. However, there is no indication that project operation and maintenance are affecting the gray wolf or its habitat. Also, Northern States is not proposing any land-disturbing activities, construction, or changes to project facilities or operation that would affect the gray wolf or its habitat and food availability. As discussed in section 3.3.3.2 of the EA, *Terrestrial Resources, Environmental Effects*, construction of the new parking area for six vehicles would not affect any wildlife or terrestrial habitat since the area currently consists of a mowed lawn. Because Northern States is not proposing any land-disturbing activities or modifications to project facilities or operation that would affect gray wolf, and there are no known occurrences of gray wolf at the project, we conclude that relicensing the project would have no effect on the gray wolf.

Canada Lynx

Northern States does not propose any measures for the protection of the Canada lynx, and no agency recommendations were received regarding the Canada lynx.

Our Analysis

There is no documentation of Canada lynx at the project and there is no suitable habitat characterized by deep snow and dense horizontal forest cover that support adequate densities of snowshoe hares. Lynx may be transients in the project area during mass dispersal events following cyclic decreases in snowshoe hare abundance in more northern home territories. Northern States is not proposing any land-disturbing activities, construction, or changes to project operation that would affect Canada lynx or its habitat and food availability. As discussed in section 3.3.3.2 of the EA, *Terrestrial Resources, Environmental Effects*, construction of the new parking area for six vehicles would not affect any wildlife or terrestrial habitat since the area currently consists of a mowed lawn. Because Northern States is not proposing any land-disturbing activities or modifications to project facilities or operation that would affect Canada lynx, and there are no known occurrences of Canda lynx at the project, we conclude that relicensing the project would have no effect on the Canada lynx.

Northern Long-Eared and Tricolored Bat

To protect the NLEB and TCB, Northern States proposes to implement Wisconsin DNR's Broad Incidental Take Permit and Broad Incidental Take Authorization (BITP/A) for Wisconsin Cave Bats, filed as Appendix E-41 of the application, and restrict the removal of trees greater than 3 inches dbh to occur outside of the NLEB pup season of June 1 through July 31. The BITP/A includes measures for excluding/removing bats from structures and restricting tree cutting during maintenance of project facilities.

River Alliance recommends that Northern States protect trees that are used for roosting or nesting habitat by NLEB.

Our Analysis

Suitable summer habitat for NLEB is present within the proposed project boundary and NLEB could occur at the project. Routine project maintenance could include limited tree removal that affects habitat used by NLEB, including upland and riparian forest at the project that may provide suitable habitat for summer roosting and foraging activities. Any other tree removal would likely be limited to periodic removal of trees that are a threat to human life, property, or safe operation of the project (hazard trees).

The BITP/A provides take limits and measures for various development and maintenance activities, some of which are unrelated to hydroelectric projects. Regarding the removal of bats from structures and tree cutting, the BITP/A ultimately requires consultation with Wisconsin DNR. In its license application, Northern States states that it would also consult with FWS prior to removing bats from any structures. However, consultation alone is an administrative measure and would not result in any foreseeable environmental benefit for NLEB.

Because NLEBs typically roost in cavities, cracks, or under bark, removing an occupied roost tree (i.e., a tree with 3 inches dbh or greater), may harm or kill adult and flightless young that may not be able to safely exit the roost (FWS, 2024d). FWS states that NLEB may not flush from a tree given their propensity to form larger colonies and to roost in tree cracks/crevices. To avoid direct effects to NLEBs while they are roosting in trees, FWS's guidance documents state that suitable roost trees should only be removed when the species is not likely to be present (FWS, 2024d). FWS specifies that tree removal should be avoided during the summer occupancy season, and that the chance that NLEBs may be adversely affected by tree removal activities outside the summer occupancy activity period is discountable since individuals are more likely to roost singly or in smaller groups during this time, and the dispersed nature greatly reduces the risk (FWS, 2024d).[107] The summer occupancy period for NLEB in the Upper Peninsula of Michigan and Wisconsin is April 15 through September 30 (FWS, 2024c).

Northern States' proposal to restrict the removal of non-hazardous trees greater than 3 inches dbh during the NLEB pup season of June 1 through July 31, would protect NLEB that are most vulnerable to tree cutting (i.e., flightless young). However, according to the FWS's

[107] 87 Fed. Reg. 73,488 (Nov. 30, 2022).

guidance documents, the pup season for NLEB in the Upper Peninsula of Michigan and in Wisconsin is June 1 through August 15 (FWS, 2024c). Therefore, Northern States' proposal would protect NLEB for most of the pup season, but would not protect NLEB from August 1 through August 15. Further, Northern States' proposal would not protect adult NLEB that may not be able to safely exist roosts during the full summer occupancy period of April 15 through September 30. Avoiding the removal of non-hazardous trees that are 3 inches dbh or greater from April 15 through September 30, would protect NLEB from harm. With the implementation of a cutting restriction for non-hazardous trees of 3 inches dbh or greater in diameter from April 15 through September 30, staff concludes that relicensing the project is not likely to adversely affect the NLEB.

River Alliance's recommendation to protect trees that are used for roosting or nesting habitat by NLEB does not define any specific measures for protecting trees, such as tree removal restrictions or time periods for any such restrictions. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits of River Alliance's recommendation. As stated above, avoiding the removal of non-hazardous trees that are 3 inches dbh or greater from April 15 through September 30, would protect NLEB from harm.

There is no documentation of TCB at the project. According to FWS's range map for this species, the project is at least 10 miles away from the furthest extent of the known range of the species (Figure B-3). Therefore, Northern States' proposal to implement Wisconsin DNR's BITP/A for Wisconsin Cave Bats would not benefit TCB. Because TCB does not occur at the project, relicensing the project would have no effect on TCB and would not jeopardize the continued existence of the TCB.

Piping Plover and Rufa Red Knot

Northern States does not propose any measures for the protection of the piping plover or rufa red knot, and no agency recommendations were received regarding these species.

Our Analysis

The piping plover and rufa red knot favor sandy coastal shoreline habitat that does not exist within the project boundary. The impoundment shoreline and banks of the Montreal River are either rocky or vegetated and do not provide habitat preferred by the species.

During long distance migration, the rufa red knot typically uses coastal marine and estuarine habitat with large areas of exposed intertidal sediments and abundant food resources needed to build up fat reserves for the next nonstop, long-distance flight. Although rufa red knot can use freshwater habitats, stopover areas must include abundant food resources (e.g., insects). There are no extensive foraging habitats, such as large areas of exposed sediment in wetlands or riverine sandbars, that would provide sufficient food resources for stopover habitat during migration. Piping plovers prefer isolated sandy beaches with sparse vegetation and cobble, which is not available in the project area.

Because preferred habitat is not present within the project boundary and it is unlikely these species make use of project land, we conclude that relicensing the project would have no effect on the piping plover or the rufa red knot.

Monarch Butterfly

As part of its proposal to continue maintaining project facilities, Northern States would continue to mow lawns, trim encroaching vegetation, and remove hazardous trees as needed to maintain project facilities and access to project recreation areas. Along the penstocks and transmission line, Northern states periodically removes woody vegetation once every few years. To protect the monarch butterfly, Northern States proposes to conduct vegetation management within the penstock and transmission line corridors between October 1 and April 30.

Michigan DNR recommends, under section 10(j), that Northern States promote native pollinator habitat and avoid the use of chemicals or other activities that could be harmful to monarch butterfly.

Our Analysis

Suitable habitat for monarch butterfly is not available in areas that are routinely mowed and trimmed during the growing season, such as parking areas and other recreation facilities, because extensive stands of milkweed are not available for monarch butterfly reproduction or foraging within the affected area. As discussed in section 3.3.3.2 of the EA, *Terrestrial Resources, Environmental Effects*, construction of the new parking area for six vehicles would not affect any wildlife or terrestrial habitat since the area currently consists of a mowed lawn. However, suitable habitat for monarch butterfly is currently available within riparian habitat at the project and along the penstock and transmission line corridors, because vegetation management does not routinely occur at these locations during the growing season.

Monarch butterfly could be present at the project during the summer months. Northern States' proposal to restrict vegetation management within the penstock and transmission line corridors to only occur between October 1 and April 30, would ensure the vegetation management in areas with suitable habitat occurs outside of the season when monarch butterflies would be present at the project. Therefore, we conclude that relicensing the project would not jeopardize the continued existence of the monarch butterfly or adversely affect the species.

Michigan DNR's recommendations to promote pollinator habitat and avoid using chemicals or other activities that could harm monarch butterfly lack specific measures. Without specific measures, staff cannot assess the benefits of these recommendations. As discussed above, Northern States is not proposing any vegetation management activities in areas with suitable habitat when monarch butterflies are present.

APPENDIX F

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

Federal Government Takeover of the Project

In accordance with section 16.14 of the Commission's regulations, a federal department or agency may file a recommendation that the United States exercise its right to take over a hydroelectric power project with a license that is subject to sections 14 and 15 of the Federal Power Act (FPA).[108] We do not consider federal takeover to be a reasonable alternative. Federal takeover of the project would require congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

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 project should no longer be used to produce power.

Project Retirement

The Commission has previously held that decommissioning is not a reasonable alternative to relicensing a project in most cases, when appropriate protection, mitigation, and enhancement measures are available.[109] Decommissioning can be accomplished in different ways depending on the project, its environment, and the particular resource needs.[110] For these reasons, 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 a participant in a relicensing proceeding demonstrates that there are serious resource

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[108] 16 U.S.C. §§ 791(a)-825(r).

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

[110] In the event that the Commission denies relicensing of 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 (2025). This can include simply shutting down the power operations, removing all or parts of the project (including the dam), or restoring the site to its pre-project condition.

concerns that cannot be addressed with appropriate license measures and that make decommissioning a reasonable alternative.[111]

Northern States does not propose decommissioning, nor does the record to date demonstrate there are serious resource concerns that cannot be mitigated if the project is relicensed. As such, there is no reason, at this time, to include decommissioning as a reasonable alternative to be evaluated and studied as part of staff's NEPA analysis.

[111] *See generally Project Decommissioning at Relicensing; Policy Statement*, FERC Stats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); *see also City of Tacoma, Wash.*, 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).

APPENDIX G

DEVELOPMENTAL RESOURCES

Power and Economic Benefits

Table G-1 summarizes the assumptions and economic information used in the analysis. Most of this information is provided by the applicant in its license application. Some is developed by Commission staff. The values provided by the applicant are typically reasonable for the purposes of our analysis. If they are not, it is noted below. Cost items common to all alternatives include: taxes and insurance; estimated capital investment required for major modifications for relicensing; licensing costs; normal operation and maintenance cost; and Commission fees. All costs are adjusted to December 2024 dollars.

Table G-1. Parameters for the economic analysis of the Superior Project (Source: Northern States and Staff).

Parameter	Value
Installed capacity	1.65 MW
Average annual generation [a]	9,035 MWh
Period of analysis	30 years
Federal income tax rate	Included in the operation and maintenance cost
Local tax rate	Included in the operation and maintenance cost
Insurance rate	Included in the operation and maintenance cost
Interest rate	8%
Construction cost	$0
Application cost [b]	$291,832
Operation and maintenance	$384,005 [c]
Estimated Commission annual charges	$5,207/year
Alternative source of power's cost (2024) [d]	
1) Energy cost	$17.53/MWh
2) Capacity benefit cost	$128.53/kW-year

[a] This is the estimated average annual energy production of the project from 2017 through 2022 reduced from 11,436 MWh to 9,035 MWh to account for the augmented flows received from the Gile project.

[b] Cost escalated to 2024 dollars.

[c] Table A-2 of Exhibit A of the license application includes the depreciation cost in the reported average annual operation and maintenance cost. Staff excluded the depreciation in the economic analysis to maintain consistency with other NEPA documents

[d] The alternative source of power cost is based on the current cost of providing the same amount of generation and capacity from a natural gas-fired combined cycle plant, as reported by the U.S. Energy Information Administration (EIA), Annual Energy Outlook 2025, for the Division 3, East North Central Region (EIA, 2025). The alternative source of power cost reported in Table G-2 is a combination of the cost of energy and capacity benefit.

Comparison of Alternatives

Table G-2 summarizes the installed capacity, annual generation, capacity benefit, alternative source of power's cost, estimated total project cost, and difference between the alternative source of power's cost and total project cost for each of the alternatives considered in this EA: No-Action Alternative, Proposed Action, and the Staff Alternative.

Table G-2. Summary of the annual cost of alternative power and annual project cost for the three alternatives for the Superior Project (Source: Staff).

	No-Action Alternative	Proposed Action	Staff Alternative
Installed capacity	1,650 kW	1,650 kW	1,650 kW
Annual generation [a]	9,035 MWh	9,035 MWh	9,035 MWh
Capacity benefit [b]	1,300 kW	1,300 kW	1,300 kW
Current alternative source of power cost [c]	$326,353	$326,353	$326,353
Total annual project cost [d]	$437,953	$466,910	$447,127
Difference between the alternative source of power cost and total annual project cost [e]	($111,600)	($140,558)	($120,774)

[a] Staff reduced the annual generation value of 11,436 MWh by 2,401 MWh, to account for the energy contributions from the Gile Project.

[b] Staff estimated the capacity benefit based on the ratio of the median flow available for generation for each of 12 months, and the hydraulic capacity of the project. This ratio is multiplied by the authorized installed capacity to determine the capacity benefit.

[c] The alternative source of power's cost for the project is based on the alternative source of power's cost in the East North Central Region, as identified in Table G-1 above.

[d] The project costs include the cost of environmental measures listed in Appendix H, and the costs identified in Table G-1. All project costs were adjusted to 2024 dollars.

[e] A number in parentheses denotes that the difference between the alternative source of power's cost and the total project cost is negative; thus, the project's cost to produce power is greater than the alternative source of power cost.

No-Action Alternative

Under the No-Action Alternative, the project would have an installed capacity of 1,650 kW, a capacity benefit of 1,300 kW, and an average annual generation of 9,035 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit is $326,353. The total annual project cost is $437,953. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce 9,035 MWh of power and provide 1,300 kW of capacity is $111,600 more than that of the alternative source of power's cost.

Applicant's Proposal

Under the Proposed Action, the project would have a total installed capacity of 1,650 kW, a capacity benefit of 1,300 kW, and an average annual generation of 9,035 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit would be $326,353. The total annual project cost would be $466,910. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce 9,035 MWh of power and provide 1,300 kW of capacity would be $140,558 more than that of the alternative source of power's cost.

Staff Alternative

Under the Staff Alternative, the project would have a total installed capacity of 1,650 kW, a capacity benefit of 1,300 kW, and an average annual generation of 9,035 MWh. The alternative source of power's current cost to produce the same amount of energy and provide the same capacity benefit would be $326,353. The total annual project cost would be $447,127. Subtracting the total annual project cost from the alternative source of power's current cost, the project's cost to produce 9,035 MWh of power and provide 1,300 kW of capacity would be $120,774 more than that of the alternative source of power's cost.

Cost of Environmental Measures

Appendix H, *Costs of Environmental Measures*, presents the cost of each environmental enhancement measure considered in our analysis for the project. All costs are in 2025 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.

APPENDIX H

COSTS OF ENVIRONMENTAL MEASURES

Table H-1. The cost of environmental measures considered in assessing the environmental effects of operating the Superior Project (Source: Northern States Power Company and Staff).

Enhancement/Mitigation Measure	Entity	Capital Cost (2024$)	Annual Cost[a] (2024$)	Levelized Annual Cost[b] (2024$)
Project Operation				
To protect aquatic resources, continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given time and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet.	Northern States, Interior,[c] Michigan DNR,[c] River Alliance, Staff	$0	$0	$0
Release a continuous minimum flow of 2 cfs to the bypassed reach year-round, in addition to seasonal aesthetic flows.	River Alliance	$0	$0[d]	$0

Enhancement/Mitigation Measure	**Entity**	**Capital Cost (2024$)**	**Annual Cost[a] (2024$)**	**Levelized Annual Cost[b] (2024$)**
To protect aquatic species: (1) avoid drawdowns of the impoundment in the winter and spawning periods (between September 15 and June 1), and use alternatives to drawdowns when possible; (2) minimize the duration, rate, and extent of any drawdowns; (3) mitigate the effects of drawdowns, including by surveying and relocating stranded organisms and preventing/managing excessive erosion and sedimentation; and (4) consult with Michigan DNR for any deviation from these measures.	Michigan DNR[c]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Develop a drawdown plan in consultation with Michigan DNR that includes measures to avoid, minimize, and mitigate the impacts of drawdowns.	Michigan EGLE	$5,000[e]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Develop, in consultation with resource agencies, a drawdown management plan to protect fish, mussels, and other aquatic life for drawdowns associated with routine maintenance and emergencies.	River Alliance	$5,000[e]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost

Enhancement/Mitigation Measure	Entity	Capital Cost (2024$)	Annual Cost[a] (2024$)	Levelized Annual Cost[b] (2024$)
Develop an operation compliance monitoring plan to document compliance with project operation that includes the following provisions: (1) locations of headwater monitoring probes/gages; (2) frequency of monitoring; (3) procedures for maintaining and calibrating monitoring equipment; (4) standard operating procedures to be implemented outside of normal operating conditions, such as scheduled or emergency facility shutdowns or maintenance activities; (5) a schedule for installing and operating the monitoring equipment; and (6) notification procedures for planned and unplanned deviations.	Northern States, Staff	$5,000	$0	$444
Develop an operation compliance monitoring plan that includes the following provisions: (1) mechanisms for documenting inflow and outflow from the project; (2) installation of staff gages that show the operating band of the impoundment; (3) installation of automatic water level recorders for impoundment and tailrace elevations; and (4) recording daily turbine operation, impoundment and tailrace elevations, and flow releases through the powerhouse and spillway.	Interior[c]	$6,300	$1,000	$1,560[f]

Develop an operation compliance monitoring plan that includes the following provisions: (1) continuously collect flow data at 15-minute intervals, including inflow to the project and flow downstream of the project, consistent with the USGS data standards; (2) installation of automatic water level recorders in the impoundment for monitoring and instantaneous reporting of impoundment elevations; (3) a description of the locations of the impoundment gages and frequency of monitoring; (4) recording and reporting of operation parameters; (5) a description of the maximum and minimum flows that can be safely passed through the penstocks and turbines; (6) measures for avoidance, minimization, and mitigation of drawdowns; (7) staff gages visible to the public; (8) standard operating procedures for facility shutdown or maintenance; (9) ramping procedures for reestablishing flows and restoring flows after deviations from run-of-river operation; (10) calibration standards for equipment and discharge rating curves for project structures, including procedures for periodically updating calibration standards and rating curves; (11) procedures for notifying and reporting deviations to resource agencies and the Commission; (12) a description of minimum flows, aesthetic and scenic flows, and bypassed reach flows; (13) a description of recreational flows and scheduled releases; (14) procedures for ice management; and (15) a description of planned maintenance, redundancy, and alarms.	Michigan DNR[c]	$36,000	$26,000	$29,198[g]

Enhancement/Mitigation Measure	Entity	Capital Cost (2024$)	Annual Cost[a] (2024$)	Levelized Annual Cost[b] (2024$)
Develop an operation compliance monitoring plan that includes: (1) daily inflow and discharge information; (2) the daily range of impoundment fluctuations; and (3) installation of a USGS gage to ensure accurate data collection.	River Alliance	$35,000	$25,000	$28,109[h]
Provide USGS-quality continuous data with a platform for real-time reporting that allows data search, report development, and comparison to nearby gages.	Michigan DNR[c]	$30,000	$25,000	$27,665[i]
To ensure compliance with run-of-river operation: (1) fund a USGS gage upstream of the impoundment or provide a similar flow gaging site with real-time, remotely accessible data; and (2) provide the calculated flows out of the project with similar quality and frequency as a USGS gage.	Michigan EGLE	$30,000	$25,000	$27,665[i]
Monitor flows, impoundment elevations, and water quality using state-of-the-art protocols and technologies like USGS gages.	Michigan HRC	$30,000	$25,000	$27,665[i]
Notify the Commission and resource agencies of planned and unplanned deviations, and only modify project operation for short periods of time of up to 3 weeks, after mutual agreement with FWS, Michigan DNR, Michigan EGLE, and Wisconsin DNR.	Northern States, Staff	$0	$0	$0

Enhancement/Mitigation Measure	Entity	Capital Cost (2024$)	Annual Cost[a] (2024$)	Levelized Annual Cost[b] (2024$)
Include in any license, an approximate longitudinal profile along the Montreal River that describes the elevations of the impoundment, spillway, sill, tailrace, and the confluence with Lake Superior.	Michigan DNR[c]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Geology and Soils				
Implement soil erosion and sediment control BMPs prior to any ground-disturbing activities.	Northern States, Staff	$0	$0	$0
To monitor erosion in the impoundment, conduct a shoreline erosion survey every 5 years.	Northern States	$0	$2,557[j]	$2,557
Aquatic Resources				
Develop, in consultation with resource agencies, a plan to monitor DO, water temperature, and other parameters deemed appropriate by Wisconsin and Michigan.	River Alliance	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Install trashracks above the intake that are designed to safely manage velocities and small enough to minimize juvenile fish entrainment.	Interior[c]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost

Enhancement/Mitigation Measure	**Entity**	**Capital Cost (2024$)**	**Annual Cost[a] (2024$)**	**Levelized Annual Cost[b] (2024$)**
Develop a conservation and protection plan for mussels.	Michigan DNR[c]	$5,000[e]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
To protect fish from impingement and entrainment, continue to maintain the existing trashrack with 1-inch clear bar spacing at the intake.	Northern States, Michigan DNR[c,k] Staff	$0	$0	$0
Terrestrial Resources				
To protect NLEB and TCB, implement Wisconsin DNR's Broad Incidental Take Permit and Broad Incidental Take Authorization for Wisconsin Cave Bats and restrict the removal of trees greater than 3 inches dbh to occur outside of the NLEB pup season of June 1 through July 31.	Northern States	$0	$0	$0
Protect trees that are used for roosting or nesting habitat by NLEB.	River Alliance	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
To protect NLEB, avoid the removal of non-hazardous trees that are 3 inches dbh or greater in diameter from April 15 through September 30.	Staff	$0	$0	$0

Enhancement/Mitigation Measure	**Entity**	**Capital Cost (2024$)**	**Annual Cost[a] (2024$)**	**Levelized Annual Cost[b] (2024$)**
To protect the monarch butterfly, conduct vegetation management within the penstock and transmission line corridors between October 1 and April 30.	Northern States, Staff	$0	$0	$0
To protect monarch butterfly, promote native pollinator habitat and avoid use of chemicals or other activities that could be harmful to the butterfly.	Michigan DNR[c]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
To protect bald eagles at the project, prior to any construction, maintenance, or vegetation management activities, identify any existing eagle nests at the project by reviewing the Wisconsin NHI, establish a buffer zone of at least 660 feet between any nest and the project activity, and schedule any project activity that would be within 660 feet of any eagle nests to occur outside of the eagle nesting season, i.e., between August 1 and January 15.	Northern States, Staff	$0	$0	$0
Develop a plan to protect bald eagles, ospreys, and their nests from land-disturbing activities.	River Alliance	$5,000[e]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost

Enhancement/Mitigation Measure	**Entity**	**Capital Cost (2024$)**	**Annual Cost[a] (2024$)**	**Levelized Annual Cost[b] (2024$)**
Any license issued by the Commission should include provisions to protect migratory birds, herpetofauna, bats, and bat roosting areas.	Michigan DNR[c]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Establish a 200-foot-wide, no-cut buffer within the project boundary to protect old growth timber, wildlife habitat, and water quality.	River Alliance	$0	$0	$0
Develop an invasive species management plan that includes provisions for conducting invasive species surveys every other year and removing or chemically treating any new invasive species.	Northern States	$5,000	$16,827	$17,271[l]
Develop an invasive species management plan with the measures proposed by Northern States and the following additional measures: (1) management actions to prevent the spread of invasive species; (2) monitoring on an annual basis; and (3) active control efforts and reporting of suspected and confirmed invasive species.	Michigan DNR[c]	$5,000	$35,000	$35,444[m]
Develop a plan for monitoring invasive species every 2 years, including provisions for using the "*Early Detection and Rapid Response Methodology*" for invasive species listed as prohibited under Wisconsin NR 40.	River Alliance	$5,000	$16,827	$17,271[l]

Enhancement/Mitigation Measure	Entity	Capital Cost (2024$)	Annual Cost[a] (2024$)	Levelized Annual Cost[b] (2024$)
Recreation, Land Use, and Aesthetic Resources				
Continue to maintain the recreation access trail, scenic overlook, tailrace fishing site, parking area, and portable toilet, and maintain the new eastern take-out site.	Northern States, Interior,[n] Staff	$54,500	$3,400	$8,241[o]
Develop a recreation management plan with the following provisions: (1) the recreation improvements proposed by Northern States; (2) replace the chain link fence at the scenic overlook with a split rail fence; (3) provide additional parking as needed to address parking capacity exceedances during the summer; (4) provide brochures showing the location of recreational facilities; (5) maintain recreation facilities in good condition; and (6) upgrade and install signage as needed.	River Alliance	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost[p]
Develop a recreation management plan.	Michigan DNR	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Provide recreation amenities if current recreation sites become overcrowded or no longer maintained.	Michigan DNR	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost

Enhancement/Mitigation Measure	**Entity**	**Capital Cost (2024$)**	**Annual Cost[a] (2024$)**	**Levelized Annual Cost[b] (2024$)**
Provide parking facilities as necessary to ensure sufficient capacity is available to access the Lake Superior Overlook.	Michigan HRC	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Replace the chain link fence at the scenic overlook with a split rail fence to improve scenic viewing.	Michigan HRC, Michigan DNR	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
To enhance recreation at the project, develop a recreation management plan that contains the following provisions: (1) a description of all licensed project recreation facilities, including a map, and associated informational, safety, and Part 8 signage; (2) a description of operation and maintenance of the licensed project recreation facilities; and (3) a schedule for completing all required recreation improvements.	Staff	$5,000[q]	$0	$444
To improve recreation access, include a map of the licensed project recreation facilities on Part 8 signage.	Staff	$500[r]	$0	$45

Enhancement/Mitigation Measure	Entity	Capital Cost (2024$)	Annual Cost[a] (2024$)	Levelized Annual Cost[b] (2024$)
Provide real-time flow information for recreation users on the internet and make it available for use by third-party sites using an Application Programming Interface.	Interior	$45,000	$26,000	$29,997[s]
Provide real-time flow information for recreation users.	American Whitewater	$30,000	$25,000	$27,665[i]
Include general information on impoundment water levels, flow releases, and other aspects of the project that affect recreation opportunities and experiences on informational signage.	Interior	$0	$0	$0[t]
Include a QR code and website address on signage so the public can access up-to-date information on real-time flows, reservoir elevations, flow release schedules, and how to access the tailwater access site.	Interior	$0	$0	$0[t]
Collaborate with National Park Service and the North Country Trail Association to improve connectivity and visitor experience of the North Country National Scenic Trail.	Interior	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Develop a land management plan with provisions to maintain and protect the project's aquatic and terrestrial habitats.	Michigan DNR[c]	$5,000[e]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost

Enhancement/Mitigation Measure	**Entity**	**Capital Cost (2024$)**	**Annual Cost[a] (2024$)**	**Levelized Annual Cost[b] (2024$)**
Develop a land management plan that includes measures to protect environmental resources associated with current project land.	Michigan EGLE, Michigan HRC	$5,000[e]	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Include recreation management provisions in a land management plan.	Michigan HRC	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost
Continue releasing a minimum aesthetic flow of 8 cfs or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15, and continue releasing a minimum aesthetic flow of 20 cfs or inflow, whichever is less, to the bypassed reach from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period.	Northern States, Staff	$0	$0	$0
Release a minimum flow, determined in consultation with stakeholders, to the bypassed reach for aesthetic purposes.	River Alliance	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost	Unknown – recommendation lacks specificity needed to estimate a cost[u]
Cultural Resources				

Enhancement/Mitigation Measure	Entity	Capital Cost (2024$)	Annual Cost[a] (2024$)	Levelized Annual Cost[b] (2024$)
To protect historic properties that are eligible for or listed on the National Register of Historic Places (National Register), develop a historic properties management plan (HPMP) in consultation with the Michigan State Historic Preservation Officer (Michigan SHPO), Wisconsin State Historic Preservation Officer (Wisconsin SHPO), and Tribes.	Northern States	$5,000[e]	$0	$444
To protect previously unidentified cultural resources that are discovered during project operation, maintenance, or other project-related work involving land-disturbing activities, stop all land-clearing and land-disturbing activities in the vicinity of the resources and consult with the Michigan SHPO, Wisconsin SHPO, and Tribes to determine the need for any cultural resource studies or measures.	Staff	$0	$0	$0
To protect cultural resources from any project modifications not specifically authorized by any new license, consult with the Michigan SHPO, Wisconsin SHPO, and Tribes, prior to implementing such project modifications, to determine the effects of the activities and the need for any cultural resource studies or measures.	Staff	$0	$0	$0

(Source: Northern States and Staff).

[a] Annual costs typically include operational and maintenance costs and any other costs that occur on a yearly basis.

[b] All capital and annual costs are converted to equal annual costs over a 30-year period to give a uniform basis for comparing costs.
[c] Recommendation filed under section 10(j) of the FPA.
[d] The proposed change would reduce annual generation by approximately 11.25 MWh.
[e] The capital cost includes $5,000 associated with the administrative cost of developing the plan.
[f] The capital cost includes $5,000 associated with the administrative cost of developing the plan, $1,000 associated with installing 2 automatic water level recorders, and $300 associated with installing a staff gage. The annual cost of $1,000 is associated with increased maintenance and recordkeeping costs associated with the water level recorders.
[g] The capital cost includes $5,000 associated with the administrative cost of developing the plan, $30,000 associated with installing a USGS-type gage capable of real-time reporting, and $1,000 associated with installing 2 automatic water level recorders in the impoundment. The annual cost includes $25,000 associated with maintaining the USGS-type gage and $1,000 associated with increased maintenance and recordkeeping costs associated with the water level recorders.
[h] The capital cost includes $5,000 associated with the administrative cost of developing the plan and $30,000 associated with installing a USGS-type gage capable of real-time reporting. The annual cost includes $25,000 associated with maintaining the USGS-type gage.
[i] The capital cost includes $30,000 associated with installing a USGS-type gage capable of real-time reporting. The annual cost includes $25,000 associated with maintaining the USGS-type gage.
[j] The cost of conducting a shoreline erosion survey would be $15,000 per event. However, the cost is discounted to account for the implementation schedule.
[k] Michigan DNR recommends that Northern States maintain trashracks to minimize fish entrainment and turbine mortality such that average normal inflow velocities are no greater than 2 fps. As discussed in section 3.3.2.2, *Fish Impingement and Entrainment*, Northern States' proposal to maintain the existing trashrack with 1-inch clear bar spacing at the intake would provide inflow velocities that are less than 2 fps. Therefore, staff grouped Michigan DNR's recommendation with Northern States' proposal to maintain the existing trashrack.
[l] The capital cost includes $5,000 associated with developing the plan. The cost of conducting an invasive species survey would be $35,000 per event. However, the annual cost is discounted to account for the implementation schedule.
[m] The capital cost includes $5,000 associated with developing the plan. The annual cost of conducting an invasive species survey would be $35,000.
[n] Interior recommends installing informational signage at the project recreation facilities which is consistent with Northern States' proposal.
[o] The capital cost includes $50,000 to establish the new hand-carry boat site and $4,500 to install signage. The annual cost includes $3,400 for annual maintenance for the of the new hand-carry boat site.

[p] Staff estimates the capital and annual costs to develop and print brochures are $1,000 and $240, respectively. The levelized annual cost of providing brochures would be $329. Staff cannot estimate the cost associated with other enhancements, based on the lack of information in River Alliance's filing.
[q] The cost includes $5,000 associated with developing the plan.
[r] The cost includes $500 for including a map of the project recreation facilities on Part 8 signage.
[s] The capital cost includes $30,000 for a new gage to provide real-time flow data on the internet and $15,000 for the Application Programming Interface. The annual cost includes $25,000 associated with maintaining the new real-time flow gage and $1,000 for maintaining the website and application.
[t] Staff assumes that the cost of this measure would be nominal.
[u] Although minimum flow releases for the bypassed reach would affect project generation, staff cannot estimate changes to generation associated with the recommendation because the recommendation lacks specificity.

APPENDIX I

COMPREHENSIVE DEVELOPMENT

This appendix discusses the basis for the measures listed in section 5.1.2, *Measures Recommended by Staff*, including the additional measures and modifications to Northern States' proposal recommended by Commission staff. In addition, this section discussed the basis for measures that are not recommended by staff.[112]

Measures Recommended by Staff

Bat Protection

To protect the federally listed endangered northern long-eared bat (NLEB) and the proposed threatened tricolored bat (TCB), Northern States Power Company (Northern States) proposes to implement the Wisconsin Department of Natural Resources' (Wisconsin DNR) Broad Incidental Take Permit and Broad Incidental Take Authorization (BITP/A) for Wisconsin Cave Bats, filed as Appendix E-41 of the application, and restrict the removal of trees greater than 3 inches diameter at breast height (dbh) during the NLEB pup season from June 1 through July 31. The BITP/A includes measures for excluding/removing bats from structures and restricting tree cutting during maintenance of project facilities. River Alliance of Wisconsin (River Alliance) recommends that Northern States protect trees that are used for roosting or nesting habitat by NLEB.

As discussed in Appendix E, *Biological Assessment*, the Superior Falls Hydroelectric Project No. 2587 (Superior Project or project) is located within counties with hibernacula known to be infected with white-nose syndrome and suitable habitat for NLEB summer roosting and foraging activities is located in the proposed project boundary. There is no documentation of TCB at the project and, according to the U.S. Fish and Wildlife Services' (FWS) range map for this species, the project is at least 10 miles away from the furthest extent of the known range of the species (Figure B-3).

Project maintenance could require periodic tree removal that may affect NLEB habitat. As discussed in Appendix E, *Biological Assessment*, Northern States' proposal to restrict the removal of trees during the NLEB pup season would protect NLEB that are most vulnerable to tree cutting (i.e., flightless young). However, Northern States' proposal would not protect adult NLEB that may not be able to safely exist roosts during the full summer occupancy period of April 15 through September 30. There would be no cost associated with Northern States' proposal.

Avoiding the removal of non-hazardous trees that are 3 inches dbh or greater from April 15 through September 30, would protect NLEB pups and adults from harm related to project operation and maintenance. There would be no cost associated with this tree removal restriction.

[112] *See* section 5.1.1, *Measures Proposed by the Applicant*, for the list of applicant-proposed measures recommended by staff based on the environmental analyses in section 3.0 and the costs in section 4.0.

Implementing a tree-cutting restriction for trees that are 3 inches dbh or greater from April 15 through September 30, would provide a greater level of protection for NLEB at no additional cost relative to Northern States' proposal, and staff recommends it.

As discussed in Appendix E, *Biological Assessment*, the BITP/A provides take limits and measures for various development and maintenance activities, some of which are unrelated to hydroelectric projects. Regarding the removal of bats from structures and tree cutting, the BITP/A ultimately requires consultation with Wisconsin DNR. Consultation alone is an administrative measure and would not result in any foreseeable environmental benefit for NLEB. Because there is no foreseeable environmental benefit associated with implementation of the BITP/A and because staff recommends a tree-cutting restriction from April 15 through September 30, staff does not recommend Northern States' proposal to implement the BITP/A and a tree-cutting restriction of June 1 through July 31.

River Alliance's recommendation to protect trees that are used for roosting or nesting habitat by NLEB does not define any specific measures for protecting trees, such as tree removal restrictions or time periods for any such restrictions. Without specific measures to analyze and consider under the Federal Power Act (FPA), staff cannot assess the benefits or costs of River Alliance's recommendation and does not recommend it.

Recreation Management Plan

As discussed in section 2.2.1, *Proposed Project Facilities*, Northern States proposes to continue to maintain the scenic overlook, tailrace fishing site, parking area, and access trail, and develop a new hand-carry boat take-out site on the eastern shoreline of the impoundment, including a gravel parking area for six vehicles to provide access to the take-out site. Northern States also proposes to install informational, safety, and Part 8 signage at the project recreation facilities.[113] In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposed project recreation facilities.

River Alliance recommends developing a recreation management plan that contains the following provisions: (1) the recreation improvements proposed by Northern States; (2) replace the chain link fence at the scenic overlook with a split rail fence; (3) provide additional parking facilities as needed to address parking capacity exceedances during the summer; (4) provide brochures showing the location of recreational facilities; (5) maintain recreation facilities in good condition; and (6) upgrade and install signage as needed. Michigan Department of Natural Resources (Michigan DNR) recommends a recreation management plan, but does not include any specific provisions in its recommendation.

Michigan DNR recommends providing recreation amenities if current recreation sites become overcrowded or no longer maintained. Michigan Hydro Relicensing Coalition (Michigan HRC) recommends that Northern States provide parking facilities as necessary to ensure sufficient capacity is available to access a non-project overlook of Lake Superior.

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[113] U.S. Department of Interior (Interior) recommends installing informational signage at the project recreation facilities which is consistent with Northern States' proposal.

As provided by River Alliance in its recommended recreation management plan, Michigan DNR and Michigan HRC recommend replacing the chain link fence at the scenic overlook with a split rail fence to improve scenic viewing.

As discussed in section 3.3.5.2, *Recreation*, in response to comments, Northern States supports the development of a recreation management plan that includes the following provisions: (1) description of proposed recreation facilities, including signage; and (2) a schedule for completing all proposed improvements. Northern States also states that it would include a map of the project recreation facilities in the recreation plan. Developing a recreation plan as recommended by Michigan DNR and River Alliance, and supported by Northern States, would benefit recreation users by providing a single reference document that describes all project recreation facilities, improvements, and maintenance during the term of any new license.

As discussed in section 3.3.5.2, *Recreation*, Michigan DNR's, Michigan HRC's, and River Alliance's recommendation to replace the chain link fence with a split rail fence at the scenic overlook would not benefit recreation. Therefore, staff does not recommend it.

Michigan DNR's recommendation to provide recreation facilities if current recreation sites become overcrowded or no longer maintained, and Michigan HRC's and River Alliance's recommendation to provide additional parking, do not include specific measures. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits or costs of the recommendations and do not recommend them. Moreover, as discussed in section 3.3.5.2, *Recreation*, stakeholders have only specifically referenced capacity concerns at the parking area for the Lake Superior Overlook, which is owned and maintained by Gogebic County and is not a project recreation facility. As proposed, the project recreation facilities would provide sufficient access for project-related recreation use and would continue to be maintained by Northern States during the term of any new license; therefore, there would be no project-related benefit to providing additional parking or recreational amenities beyond those proposed by Northern States, and staff does not recommend it.

As discussed in section 3.3.5.2, *Recreation*, River Alliance's recommendation to provide recreation brochures at the project would provide similar benefits Northern States' proposed informational and Part 8 signage. However, recreation brochures could be depleted and intermittently unavailable until refilled by Northern States. Staff estimates that the levelized annual cost of providing brochures at the project would be $329. Staff concludes that the benefits of the brochures do not outweigh the cost, and therefore, does not recommend it.

As discussed in section 3.3.5.2, *Recreation*, including the following provisions in the recreation management plan would enhance recreation at the project: (1) a description of all licensed project recreation facilities, including a map, and associated informational, safety, and Part 8 signage; (2) a description of operation and maintenance of the licensed project recreation facilities; and (3) a schedule for completing all required recreation improvements. Staff estimates that the levelized annual cost of developing the plan would be $444. Staff concludes that the benefits of the recreation management plan would outweigh the costs, and recommends it.

<u>Information on Part 8 Signage</u>

Interior recommends that project signage show general information on impoundment water levels, flow releases, and other aspects of the project that affect recreation opportunities and experiences. Interior also recommends that Northern States include a Quick Response (QR) code and website address on signage so the public can access up-to-date information on real-time flows, reservoir elevations, flow release schedules, and how to access the tailwater access site.

As discussed in section 3.3.5.2, *Recreation*, Interior's recommendation would not provide information that benefits project-related recreation because the project would operate in a run-of-river mode, maintain stable water levels, would not provide scheduled flow releases (e.g., for whitewater boating), and would provide recreation opportunities regardless of flow at the project. Considering that recreation opportunities and access would not change with flow or other variables, there would also be no project-related benefit associated with Interior's recommendation to include a QR code and a website address on signage. Because there would be no project-related benefit associated with Interior's recommendations, staff does not recommend them.

In response to comments, Northern States states that it intends to include a map of the project recreation facilities on Part 8 signs, which could benefit recreation access by providing information on recreation opportunities for recreation users at the project. As discussed in section 3.3.5.2, *Recreation*, a map would provide adequate information to access the tailrace fishing site. Staff estimates that the levelized annual cost of including a map of the project recreation facilities on Part 8 signage would be $45. Staff concludes that the benefits of including the map on Part 8 signage would outweigh the costs, and recommends it.

Cultural Resources Protection

As discussed in section 3.3.6.2, *Cultural Resources, Environmental Effects*, there are no known historic properties in the area of potential effects (APE) of the project, and Northern States is not proposing any land-disturbing activities, construction, or modifications to project facilities or operation that would adversely affect cultural resources relative to the project as currently licensed. During the term of any license, the applicant would occasionally need to conduct maintenance activities at the project that could include ground-disturbing activities that have the potential to affect undiscovered historic and archaeological resources.

To protect previously unidentified cultural resources that are discovered during project operation, maintenance, or other project-related work involving land-disturbing activities, Northern States could stop all land-clearing and land-disturbing activities in the vicinity of the resource and consult with the Michigan and Wisconsin State Historic Preservation Officers (SHPO)s and Tribes to determine the need for any cultural resource studies or measures. In addition, to protect cultural resources from any project modifications not specifically authorized by any new license, Northern States could consult with the Michigan and Wisconsin SHPOs and Tribes prior to implementing such project modifications, to determine the effects of the activities and the need for any cultural resource studies or measures. Implementing these measures would have no cost and we recommend that they be included in any new license issued for the project.

Measures Not Recommended

Erosion Control and Surveys

Northern States proposes to conduct a shoreline erosion survey every 5 years to monitor erosion in the impoundment.

As discussed in section 3.3.1.2, *Environmental Effects*, shoreline erosion surveys would not provide project-related benefits because operating the project in a run-of-river mode, as proposed, would continue to minimize project-induced shoreline erosion and monitoring alone would not benefit shoreline stability. Staff estimates that the total levelized annual cost of Northern States' proposed shoreline erosion surveys would be $2,557, and concludes that the benefits do not outweigh the costs. Therefore, staff does not recommend it.

Water Quality Monitoring

River Alliance recommends that Northern States develop, in consultation with resource agencies, a plan to monitor dissolved oxygen (DO), water temperature, and other parameters deemed appropriate by Wisconsin and Michigan. Michigan HRC also recommends that Northern States monitor, among other things, water quality using state-of-the-art protocols and technologies like United States Geological Survey (USGS) gages.

As discussed in section 3.3.2.2, *Water Resources and Aquatic Habitat*, developing a water quality monitoring plan and monitoring water quality, as recommended by River Alliance and Michigan HRC, respectively, could provide information about temperature and DO concentrations during any new license term. However, River Alliance and Michigan HRC did not provide any specific measures to enhance water quality, and monitoring itself would not provide any benefits to water quality during the term of a license. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits or costs of River Alliance's recommended plan and Michigan HRC's recommendation to monitor water quality. Therefore, staff does not recommend these measures. However, operating the project in a run-of-river mode, as proposed by Northern States and recommended by staff in section 5.1.1, *Measures Proposed by the Applicant*, would continue to minimize project effects on water quality.

Minimum Flow for Aquatic Resources

The project creates an approximately 1,900-foot-long bypassed reach of the Montreal River. The current license does not require a year-round minimum bypassed reach flow, but does require a minimum aesthetic flow of 8 cubic feet per second (cfs) or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15, and a minimum aesthetic flow of 20 cfs or inflow, whichever is less, to the bypassed reach from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period. Northern States proposes to continue releasing the minimum aesthetic flows. In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposed minimum flows.

River Alliance recommends that Northern States release a continuous minimum flow of 2 cfs to the bypassed reach year-round, in addition to seasonal aesthetic flows, to sustain aquatic life.

As discussed in section 3.3.2.2, *Minimum Flows*, a year-round flow of 2 cfs would provide marginal aquatic habitat in the bypassed reach when water would not be provided by Northern States' proposal, including from mid-October through late May. However, it is unlikely that a year-round minimum flow of 2 cfs would provide any significant benefit to aquatic resources in the bypassed reach, considering the cold temperatures that occur from mid-October through late May in northern Wisconsin/Michigan and the lack of substrate diversity, steep gradient, and segmented habitat in the bypassed reach. We estimate that a year-round minimum flow of 2 cfs would reduce annual generation by 11.25 megawatt-hours and conclude that the marginal benefits associated with a 2-cfs minimum flow would not outweigh the reduction in generation, and do not recommend it.

Minimum Flow for Aesthetic Resources

Northern States proposes to continue to release a minimum aesthetic flow of 8 cfs or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15, and continue to release the minimum aesthetic flow of 20 cfs or inflow, whichever is less, from 8:00 am to 8:00 pm on weekends and holidays during the same period. In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposed minimum flows.

River Alliance recommends that Northern States release a minimum aesthetic flow to the bypassed reach for the enjoyment of the public. River Alliance does not specify the minimum flow to be released. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits or costs of River Alliance's recommendation and does not recommend it.

Operation Compliance Monitoring

Northern States proposes to develop an operation compliance monitoring plan to document compliance with the operational requirements of any license, including impoundment elevation and minimum flow requirements. Northern States proposes to include the following provisions in the plan: (1) locations of headwater monitoring probes/gages; (2) frequency of monitoring; (3) procedures for maintaining and calibrating monitoring equipment; (4) standard operating procedures to be implemented outside of normal operating conditions, such as scheduled or emergency facility shutdowns or maintenance activities; (5) a schedule for installing and operating the monitoring equipment; and (6) notification procedures for planned and unplanned deviations. We estimate that the levelized annual cost of Northern States' proposed operation compliance monitoring plan would be $444.

Interior recommends, under section 10(j) of the FPA, that Northern States develop an operation compliance monitoring plan that includes the following provisions: (1) mechanisms for documenting inflow and outflow from the project; (2) installation of staff gages that show the operating band of the impoundment; (3) installation of automatic water level recorders for impoundment and tailrace elevations; and (4) recording daily turbine operation, impoundment and tailrace elevations, and flow releases through the powerhouse and spillway. We estimate that the levelized annual cost of Interior's recommended operation compliance monitoring plan would be $1,560.

Michigan DNR recommends, under section 10(j), that Northern States develop an operation compliance monitoring plan that includes the following provisions: (1) continuously collect flow data at 15-minute intervals, including inflow to the project and flow downstream of the project, consistent with the United States Geological Survey's (USGS) data standards; (2) installation of automatic water level recorders in the impoundment for monitoring and instantaneous reporting of impoundment elevations; (3) a description of the locations of the impoundment gages and frequency of monitoring; (4) recording and reporting of operation parameters (e.g., flows through units, gate opening, and project shutdowns); (5) a description of the maximum and minimum flows that can be safely passed through the penstocks and turbines; (6) measures for avoidance, minimization, and mitigation of drawdowns; (7) staff gages visible to the public; (8) standard operating procedures for facility shutdown or maintenance; (9) ramping procedures for reestablishing flows and restoring flows after deviations from run-of-river operation; (10) calibration standards for equipment and discharge rating curves for project structures (e.g., spillways, gates), including procedures for periodically updating calibration standards and rating curves; (11) procedures for notifying and reporting deviations to resource agencies and the Commission; (12) a description of minimum flows, aesthetic and scenic flows, and bypassed reach flows; (13) a description of recreational flows and scheduled releases; (14) procedures for ice management; and (15) a description of planned maintenance, redundancy, and alarms. We estimate that the levelized annual cost of Michigan DNR's recommended operation compliance monitoring plan would be $29,198.[114]

Michigan Department of Energy Great, Great Lakes, and Energy (Michigan EGLE) recommends that Northern States: (1) fund a USGS gage upstream of the impoundment or provide a similar flow gaging site with real-time, remotely accessible data; and (2) provide the calculated outflows through each release point at the project with similar quality and frequency as a USGS gage. We estimate that the levelized annual cost of Michigan EGLE's recommendations would be $27,665.

River Alliance recommends that Northern States develop an operation compliance monitoring plan that includes provisions for: (1) daily inflow and discharge information; (2) the daily range of impoundment fluctuations; and (3) installation of a USGS gage to ensure accurate data collection. We estimate that the levelized annual cost of River Alliance's recommended operation compliance monitoring plan would be $28,109. Michigan HRC recommends that Northern States monitor flows, impoundment elevations, and water quality using state-of-the-art

[114] Michigan DNR separately recommends, under section 10(j), that Northern States provide USGS-quality continuous data with a platform for real-time reporting that allows data search, report development, and comparison to nearby gages. This recommendation is consistent with items 1 and 4 of Michigan DNR's recommended plan. Staff estimates that the levelized annual cost of providing USGS-quality continuous data alone would be $27,665. This cost is included in the levelized annual cost of the plan.

protocols and technologies like USGS gages. We estimate that the levelized annual cost of Michigan HRC's recommendations would be $27,665.

Overall, as discussed in section 3.3.2.2, *Operation Compliance*, Northern States' proposed operation compliance monitoring plan would help the Commission verify that the project is maintaining compliance with impoundment elevation limits, run-of-river operation, and minimum flow releases, thereby facilitating administration of the license and avoiding misunderstandings. In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposed plan.

Section 3.3.2.2, *Operation Compliance*, provides a comprehensive analysis of all recommendations. Several of the measures recommended by Interior, Michigan DNR, Michigan EGLE, Michigan HRC, and River Alliance are included in Northern States' proposed operation compliance monitoring plan. Additional measures for documenting inflow and outflow from the project, including but not limited to Interior's, Michigan DNR's, Michigan EGLE's, Michigan HRC's, and River Alliance's recommendations to install flow and impoundment water level monitoring equipment, including USGS gages, would provide mechanisms for ensuring compliance with run-of-river operation, impoundment elevations, and minimum flow releases. However, Northern States currently monitors the impoundment elevation with an automatic water level recorder, maintains a publicly visible staff gage that displays the impoundment elevation, and documents flow through the project based on gate openings and turbine discharges at hourly intervals. As concluded in section 3.3.2.2, it is unclear how the additional measures recommended by stakeholders would provide a significant benefit for maintaining compliance with any proposed or recommended operating requirements. Therefore, we conclude the benefits associated with the additional measures recommended by Interior, Michigan DNR, Michigan EGLE, Michigan HRC, and River Alliance do not outweigh the costs, and we do not recommend them.

<u>Longitudinal Profile</u>

Michigan DNR recommends, under section 10(j), that any license include an approximate longitudinal profile along the Montreal River, including the elevations of the impoundment, spillway, sill, tailrace, and the confluence with Lake Superior.

Michigan DNR does not explain how this information could be used to evaluate project compliance with any operational requirements or how the information would benefit aquatic resources. Michigan DNR did not include a cost estimate for its recommendation and staff does not have enough information to estimate the cost due to the lack of specificity in the extent and accuracy of the longitudinal profile.

Without any apparent project-related benefit and insufficient information to estimate a cost for Michigan DNR's recommendation, staff does not recommend it. As stated above, it is staff's conclusion that Northern States' proposal would provide sufficient mechanisms for ensuring compliance with run-of-river operation, impoundment elevations, and minimum flow releases.

Impoundment Drawdowns

Northern States is not proposing any impoundment drawdowns during the term of any new license but states that drawdowns will likely be necessary for project maintenance or emergencies during the term of any new license. Northern States proposes to notify the Commission and resource agencies of any planned and unplanned deviations, including impoundment drawdowns; and only modify project operation for short periods of time, of up to 3 weeks, after mutual agreement with the Interior, Michigan DNR, Michigan EGLE, and Wisconsin DNR. In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposed measures.

Michigan DNR recommends, under section 10(j), that Northern States: (1) avoid drawdowns of the impoundment in the winter and spawning periods (between September 15 and June 1), and use alternatives to drawdowns (e.g., coffer dams) when possible; (2) minimize the duration, rate, and extent of any drawdowns; (3) mitigate the effects of drawdowns, including by surveying and relocating stranded organisms and preventing/managing excessive erosion and sedimentation; and (4) consult with Michigan DNR for any deviation from these measures. Michigan EGLE recommends that Northern States develop a drawdown plan in consultation with Michigan DNR that includes measures to avoid, minimize, and mitigate the impacts of drawdowns, such as through organism stranding and relocation efforts. River Alliance recommends that Northern States develop, in consultation with resource agencies, a drawdown management plan for drawdowns associated with routine maintenance and emergencies.

Michigan DNR also recommends, under section 10(j), that Northern States develop a conservation and protection plan for mussels. Michigan DNR states that the existence and operation of the project negatively affect mussels and other freshwater species and that the plan could include measures such as surveying and relocating mussels prior to construction and repair activities (e.g., spillway inspections, penstock footing replacements, and wingwall repairs).

As discussed in section 3.3.2.2, *Project Maintenance and Emergencies*, Michigan DNR's recommended measures for drawdowns are general in nature, except for the recommendation to avoid drawdowns of the impoundment in the winter and spawning periods (between September 15 and June 1). Avoiding all drawdowns during this time period would protect fish nests/eggs from dewatering and would protect herpetofauna (e.g., turtles) from freezing in the winter. However, emergency and maintenance drawdowns during the period of September 15 to June 1 could be needed for project safety and the operational integrity of the hydropower development, respectively. Michigan DNR's other recommendations to use alternatives to drawdowns and mitigate the effects of drawdowns involve future, unknown actions, for which staff cannot assess the benefits or costs. Because it is not operationally feasible to avoid all drawdowns from September 15 to June 1, and because staff cannot assess the benefits or costs of Michigan DNR's other measures, staff does not recommend them.

Michigan EGLE's and River Alliance's recommendations to develop a drawdown plan do not include any specific measures. Similarly, Michigan DNR's recommendation to develop a mussel protection plan does not identify any specific measures. Although Michigan EGLE and Michigan DNR mention organism surveying and relocation efforts, they do not describe any specific efforts, such as when surveying would be necessary (e.g., all drawdowns or only drawdowns below certain depths) and procedures for relocating mussels. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits or costs of the recommendations and do not recommend them.

As discussed in section 3.3.2.2, *Project Maintenance and Emergencies*, the effects of any planned or unplanned drawdown on fish, mussels, and other resources within and downstream of the impoundment depend on the seasonal timing, magnitude, duration, drawdown and refill rates, and flow releases downstream of the project. Northern States' proposal to only modify project operation for short periods of time, of up to 3 weeks, after mutual agreement with Interior, Michigan DNR, Michigan EGLE, and Wisconsin DNR, would allow for specific measures to be developed in consultation with resource agencies for each planned drawdown. Obtaining agreement from the resource agencies (e.g., on timing, duration, and environmental measures) prior to any planned drawdowns of up to 3 weeks would help protect aquatic resources. For any planned drawdown lasting 3 weeks or more, Northern States' would file an application for a temporary amendment of the license, which would ensure that the Commission and resource agencies have an opportunity to consider the need for and effects of the proposed actions at that time.

Fish Protection Measures

Northern States proposes to maintain the existing trashrack with 1-inch clear bar spacing. In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposal.[115]

Interior recommends, under section 10(j), that Northern States install trashracks above the intake that are designed to safely manage velocities and small enough to minimize juvenile fish entrainment. Interior's recommendation lacks any specific measures. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits or costs of this recommendation and does not recommend it. As discussed in section 3.3.2.2, *Fish Impingement and Entrainment*, the existing trashrack with 1-inch clear bar spacing would minimize juvenile fish entrainment and continue to protect fish populations in the impoundment.

Sensitive Species Protection

Michigan DNR recommends, under section 10(j), that any license issued by the Commission include provisions to protect migratory birds, herpetofauna, bats, and bat roosting

[115] As discussed in section 3.3.2.2, *Fish Impingement and Entrainment*, Northern States' proposal would result in inflow velocities that are less than 2 feet per second, as recommended by Michigan DNR under section 10(j). Therefore, staff's recommendation is consistent with Michigan DNR's recommendation.

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areas. River Alliance also recommends that Northern States develop a plan to protect bald eagles, ospreys, and their nests from land-disturbing activities.

As discussed in section 3.3.3.2, *Project Operation and Maintenance*, Michigan DNR does not identify any issues related to migratory birds, herpetofauna, bats, and bat roosting areas, nor does Michigan DNR identify any specific measures or associated objectives for these species. Similarly, River Alliance's recommendation to develop a plan to protect bald eagles and ospreys does not identify any specific measures to protect eagles or ospreys. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits or costs of these recommendations, and does not recommend them as license conditions. As discussed in section 3.3.3.2, *Project Operation and Maintenance*, continuing to operate and maintain the project as proposed would not significantly affect wildlife or its habitat. Also, as discussed in section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposal to protect bald eagles at the project, prior to any construction, maintenance, or vegetation management activities, by identifying any existing eagle nests at the project, establishing a buffer zone of at least 660 feet between any nest and the project activity, and scheduling any project activity that would be within 660 feet of any eagle nests to occur outside of the eagle nesting season, i.e., between August 1 and January 15.

<u>Pollinator Habitat</u>

The project is located within the range of the monarch butterfly. Although there is no documentation of the monarch butterfly at the project, milkweed plants that provide suitable habitat for monarch butterfly reproduction and foraging could potentially occur within the project boundary.

Michigan DNR recommends, under section 10(j), that Northern States implement measures to promote native pollinator habitat and avoid the use of chemicals or other activities that could be harmful to monarch butterfly. Michigan DNR's recommendation lacks specific measures and, without specific measures to analyze and consider under the FPA, staff cannot assess the benefits or costs of the recommendation. Therefore, staff does not recommend it.

In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposal to only conduct vegetation management within the penstock and transmission line corridors between October 1 and April 30, when the monarch butterfly would not be present at the project.[116]

<u>Vegetation Management Buffer Zone</u>

River Alliance recommends a 200-foot-wide, no-cut buffer within the project boundary to protect old growth timber, wildlife habitat, and water quality. However, as discussed in section 3.3.3.2, *Project Operation and Maintenance*, Northern States is only proposing to maintain vegetation to access project facilities and remove hazard trees. Continuing vegetation management and hazard tree removal around project facilities would not significantly affect old

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[116] *See* Appendix E, *Biological Assessment*, for staff's analysis of project effects on the monarch butterfly.

growth timber, wildlife habitat, or water quality. Moreover, maintaining a 200-foot-wide, no-cut buffer is not operationally feasible because Northern States would need to periodically manage vegetation and remove hazard trees to maintain access to project facilities and safety for recreation users during the term of any new license. Because Northern States' proposed vegetation management practices would not significantly affect wildlife or wildlife habitat, and a no-cut buffer as recommended by River Alliance is not operationally feasible, staff does not recommend a no-cut buffer.

Invasive Species Management

Northern States proposes to develop an invasive species management plan that includes: (1) biennial surveys for invasive species at regularly maintained areas, including recreation sites, in July or August; (2) control measures that could include manual removal, mechanical removal, and chemical treatment; (3) installing invasive species informational signs, if provided by Wisconsin DNR and Michigan DNR; (4) notifying Michigan DNR and Wisconsin DNR within 5 days of identifying any new "rapid response" species; and (5) annual reporting of monitoring results and a summary of any control activities to the resource agencies and the Commission.

Michigan DNR recommends, under section 10(j), that Northern States' proposed invasive species plan should also include the following provisions to prevent the spread of invasive species: (1) management actions to prevent the spread of invasive species; (2) monitoring on an annual basis; and (3) active control efforts and reporting of suspected and confirmed invasive species.

River Alliance recommends that Northern States develop a plan for monitoring invasive species every 2 years, including provisions for using the "*Early Detection and Rapid Response Methodology*" for invasive species listed as prohibited under Wisconsin NR 40.

As discussed in section 3.3.3.2, *Invasive Species Management*, the Invasive Species Study identified terrestrial invasive plants that are prevalent throughout the State of Wisconsin and Upper Peninsula of Michigan. Northern States' proposed invasive species management plan and Michigan DNR's and River Alliance's recommended invasive species plans could help determine if an invasive species is proliferating at the project during the term of any new license and could reduce the proliferation of any such species at the project during the term of any new license. However, there is no information in the project record indicating that the project has caused or will cause the spread or proliferation of invasive species; that the invasive species currently at the project are adversely affecting wildlife or its habitat; or that any control measures would be successful at reducing invasive species. Therefore, there is no apparent project-related benefit from an invasive species management plan. Accordingly, Northern States' proposed plan and Michigan DNR's and River Alliance's recommended plans would not be worth the respective costs of $17,271; $35,444; and $17,271, and staff does not recommend them.

Real-Time Flow Information

Northern States' proposes to continue to maintain the recreation access trail, scenic overlook, tailrace fishing site, parking area, and portable toilet, and maintain the new eastern take-out site. Northern States' also proposes to continue operating the project in a run-of-river mode with a stable impoundment elevation; releasing a minimum aesthetic flow of 8 cfs or inflow, whichever is less, to the bypassed reach from the Saturday before Memorial Day through October 15; and releasing a minimum aesthetic flow of 20 cfs or inflow, whichever is less, to the bypassed reach from 8:00 a.m. to 8:00 p.m. on weekends and holidays during the same period. In section 5.1.1, *Measures Proposed by the Applicant*, staff recommends Northern States' proposals for project recreation facilities, run-of-river operation, and aesthetic flows.

Interior and American Whitewater recommend that Northern States provide real-time flow information for recreation users. Interior recommends that Northern States publish the information on the internet and make it available for use by third-party sites using an Application Programming Interface. Interior states that providing real-time flow information on the internet would allow the public to make more informed decisions about recreation use.

As discussed in section 3.3.5.2, *Recreation*, continuing to operate the project with stable impoundment elevations would ensure boating opportunities regardless of flow and continuing to release minimum aesthetic flows in the bypassed reach would ensure opportunities for aesthetic viewing. Also, Lake Superior backwaters the downstream reach below the powerhouse, ensuring fishing opportunities at the tailrace fishing site regardless of flow. Based on the recreation opportunities provided by the Proposed Action, providing real-time flow information on the internet would not benefit recreation use. Staff estimates that the levelized annual cost of Interior's and American Whitewater's recommendations would be $29,997 and $27,665, respectively, and staff does not recommend them.

<u>Scenic Trail Collaboration</u>

Interior recommends that Northern States collaborate with the National Park Service (Park Service) and the North Country Trail Association (Trail Association) to improve the connectivity and user experience of the North Country National Scenic Trail, including: (1) by providing a long-term agreement, such as an easement with the Trail Association on land owned by Northern States outside of the proposed project boundary, to enable the Scenic Trail to connect between Lake Road (Michigan County Road 505) near the Wisconsin/Michigan border and the Montreal River Gorge Overlook within Michigan; and (2) to identify future opportunities to enhance visitor experiences, promote off-road trail routes, and maximize trail connectivity in Wisconsin traveling west from the Wisconsin Highway 122 bridge over the Montreal River.

Interior's recommendation pertains to land use and access on non-project land (i.e., land outside of the proposed project boundary). Interior has not identified any adverse project effects on recreation that would be mitigated by its recommendation or how its recommendation would enhance recreation at the project. Therefore, there is no indication that Interior's recommendation would benefit recreation at the project and staff does not recommend it.

<u>Land Management Plan</u>

Michigan DNR recommends, under section 10(j), that Northern States develop a land management plan with provisions to maintain and protect the project's aquatic and terrestrial habitats. Michigan EGLE and Michigan HRC also recommend the development of a land management plan that includes measures to protect environmental resources associated with current project land. Michigan HRC recommends that recreation management provisions be included in a land management plan to clearly identify all facilities and responsibilities for operation and maintenance.

The only provision that Michigan DNR describes for the land management plan is an annual consultation meeting between Northern States and interested stakeholders to discuss land management. However, consultation alone is an administrative measure and would not provide any foreseeable benefits for environmental resources. In its explanation for the land management plan, Michigan DNR states that the Commission should consider protective buffers to timber harvests and protective requirements for sensitive species, but as discussed in section 3.3.5.2, *Land Use*, Northern States is not proposing timber harvesting on any land in the proposed project boundary. As discussed in section 3.3.3.2, *Terrestrial Resources*, *Environmental Effects*, under the Proposed Action, project management activities would only occur at project facilities to maintain project access roads and parking areas, mow lawns, trim vegetation, and remove hazardous trees to maintain project access, which would not materially affect wildlife or its habitat. Therefore, there is no reasonably foreseeable project-related benefit associated with a land management plan. Staff estimates that the administrative cost of developing a land management plan would be $5,000, but Michigan DNR did not provide specific measures needed to estimate a levelized annual cost. Without any reasonably foreseeable project-related benefit, staff concludes that developing the plan is not worth the cost and does not recommend it.

Michigan EGLE's and Michigan HRC's recommendations for a land management plan do not identify any specific resources that would be protected by the recommended plan or any specific measures that would provide protection to any lands within the project boundary under the current license. Without specific measures to analyze and consider under the FPA, staff cannot assess the benefits and costs of these recommendations and does not recommend them.

As to Michigan HRC's recommendation to include recreation management provisions in a land management plan, staff recommends above in *Additional Measures Recommended*, that Northern States develop a recreation management plan that includes provisions for operation and maintenance of project recreation facilities. There would be no additional project-related benefit associated with including recreation management provisions in a land management plan and staff does not recommend it.

Historic Properties Management Plan

Northern States proposes to develop a historic properties management plan (HPMP). However, an HPMP is only needed to mitigate for adverse effects to historic properties within a project's APE. If there are no historic properties or no adverse effects to historic properties, then an HPMP would have no project-related benefit and therefore would not be needed. As discussed in section 3.3.6, *Cultural Resources*, there are no known historic properties within the APE for the Superior Project and no foreseeable project effects on historic properties. Therefore, the proposed HPMP is not needed to protect any historic properties during the term of any new license. Staff is not aware of any other project-related benefits of the HPMP for cultural resources and concludes that implementing the proposed HPMP is not worth the levelized annual cost of $444.

Post-Licensing Consultation

Interior states that issues frequently come up throughout the term of a license, such as power outages, low flows, and unexpected emergencies that may pose a threat to fish and wildlife and recreation resources in the vicinity of the project. Interior recommends Northern States consult with FWS, Bureau of Indian Affairs, Tribes, Wisconsin DNR, and Michigan DNR on matters affecting fish and wildlife resources and Park Service and Wisconsin DNR on recreational use throughout the term of any license.

Consultation alone is an administrative measure and would not result in any foreseeable environmental benefit for fish, wildlife, or recreation resources. However, Northern States proposes and staff recommends developing an operation compliance monitoring plan that would include consultation with resource agencies. Northern States also proposes and staff also recommends notifying the Commission and resource agencies of planned and unplanned deviations (e.g., impoundment drawdowns), and only modifying project operation for short periods of time of up to 3 weeks, after mutual agreement with FWS, Michigan DNR, Michigan EGLE, and Wisconsin DNR. Staff also recommends developing a recreation management plan to enhance recreation at the project. A recreation plan would also be developed in consultation with resource agencies and other interested stakeholders.

In addition to the staff-recommended operation compliance monitoring plan, standard license Article 15[117] provides that the licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate the project works, and comply with modifications required by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or state fish and wildlife agencies, after notice and opportunity for hearing. In addition, standard article 3 states that no substantial changes to project works or operation will be permitted without prior Commission approval. Article 3 only permits minor changes in project works or in uses of project land if such changes will not result in an adverse environmental impact. A licensee must file an application to amend the license and receive Commission authorization before substantially modifying project works or operation.[118] Further, before filing an amendment application, the licensee must consult with any resource agency whose interests would be affected by the amendment,[119] such as FWS if fish and wildlife species would be affected by the amendment.

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[117] *See Standardized Conditions for Inclusion in Preliminary Permits and Licenses Issued Under Part I of the Fed. Power Act*, Order No. 540, 54 FPC 1792 (1975) (providing Form L-3, Article 15).

[118] *See id.* at Article 3.

[119] *See* 18 C.F.R. §§ 4.38(a) and 4.200 (2025).

Because the staff-recommended operation compliance monitoring plan, deviation procedures, recreation management plan, and the Commission's standard license articles and regulations already provide post-license notification and consultation procedures, Interior's recommendation for consultation is unnecessary and staff does not recommend it.

APPENDIX J

FISH AND WILDLIFE AGENCY SECTION 10(J) RECOMMENDATIONS

Table J-1. Analysis of fish and wildlife recommendations for the Superior Project (Source: Staff).

Recommendation	Entity	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
To protect aquatic resources, continue operating the project in a run-of-river mode, such that outflow from the project approximates inflow to the impoundment at any given time and the surface elevation of the impoundment is maintained between a minimum of 739.7 feet and a maximum of 740.2 feet.	Interior, Michigan DNR	Yes	$0	Yes
To protect aquatic species: (1) avoid drawdowns of the impoundment in the winter and spawning periods (between September 15 and June 1), and use alternatives to drawdowns when possible; (2) minimize the duration, rate, and extent of any drawdowns; (3) mitigate the effects of drawdowns, including by surveying and relocating stranded organisms and preventing/managing excessive	Michigan DNR	Yes	Unknown – recommendation lacks specificity needed to estimate a cost	No. The recommendation is inconsistent with sections 4(e) and 10(a) of the FPA because emergency and maintenance drawdowns during the period of September 15 to June 1 could be needed for project safety and the operational integrity of the hydropower development, respectively. Also, Michigan DNR's other recommended measures involve future, unknown actions, for which staff cannot assess the benefits or costs, or consistency with sections 4(e) and 10(a)

Recommendation	Entity	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
erosion and sedimentation; and (4) consult with Michigan DNR for any deviation from these measures.				of the FPA. Northern States' proposal to obtain mutual agreement from resource agencies prior to planned deviations would provide Michigan DNR and other resource agencies the opportunity to consult on any specific measures prior to any planned drawdown.
Develop an operation compliance monitoring plan that includes the following provisions: (1) mechanisms for documenting inflow and outflow from the project; (2) installation of staff gages that show the operating band of the impoundment; (3) installation of automatic water level recorders for impoundment and tailrace elevations; and (4) recording daily turbine operation, impoundment and tailrace elevations, and flow releases through the powerhouse and spillway.	Interior	Yes	$1,560	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because the benefits do not outweigh the costs. Staff recommends Northern States' proposed operation compliance monitoring plan.

Recommendation	Entity	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
Develop an operation compliance monitoring plan that includes the following provisions: (1) continuously collect flow data at 15-minute intervals, including inflow to the project and flow downstream of the project, consistent with the USGS data standards; (2) installation of automatic water level recorders in the impoundment for monitoring and instantaneous reporting of impoundment elevations; (3) a description of the locations of the impoundment gages and frequency of monitoring; (4) recording and reporting of operation parameters; (5) a description of the maximum and minimum flows that can be safely passed through the penstocks and turbines; (6) measures for avoidance, minimization, and mitigation of drawdowns; (7) staff gages visible to the public; (8) standard operating procedures for facility shutdown or maintenance; (9) ramping procedures for reestablishing flows	Michigan DNR	Yes	$29,198	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because the benefits do not outweigh the costs. Staff recommends Northern States' proposed operation compliance monitoring plan.

Recommendation	Entity	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
and restoring flows after deviations from run-of-river operation; (10) calibration standards for equipment and discharge rating curves for project structures, including procedures for periodically updating calibration standards and rating curves; (11) procedures for notifying and reporting deviations to resource agencies and the Commission; (12) a description of minimum flows, aesthetic and scenic flows, and bypassed reach flows; (13) a description of recreational flows and scheduled releases; (14) procedures for ice management; and (15) a description of planned maintenance, redundancy, and alarms.				
Provide USGS-quality continuous data with a platform for real-time reporting that allows data search, report development, and comparison to nearby gages.	Michigan DNR	Yes	$27,665	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because the benefits do not outweigh the costs.

Recommendation	Entity	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
Include in any license, an approximate longitudinal profile along the Montreal River that describes the elevations of the impoundment, spillway, sill, tailrace, and the confluence with Lake Superior.	Michigan DNR	No, a "longitudinal profile" is not a specific fish and wildlife measure.	Unknown – recommendation lacks specificity needed to estimate a cost	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because there are no foreseeable project-related benefits to outweigh costs associated with the measure.
Install trashracks above the intake that are designed to safely manage velocities and small enough to minimize juvenile fish entrainment.	Interior	Yes	Unknown – recommendation lacks specificity needed to estimate a cost	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because Interior has not provided specific fish protection measures; therefore, staff cannot analyze the benefits or costs, or consistency with sections 4(e) and 10(a) of the FPA.
Maintain trashracks to minimize fish entrainment and turbine mortality such that average normal inflow velocities immediately upstream of the trashracks are no greater than 2 fps.	Michigan DNR	Yes	$0	Yes. This recommendation is consistent with Northern States' proposal to continue to maintain the existing trashrack.
Develop a conservation and protection plan for mussels.	Michigan DNR	Yes	Unknown – recommendation lacks specificity	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because Michigan DNR has not provided specific measures to conserve and protect mussels; therefore, staff cannot analyze

Recommendation	Entity	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
			needed to estimate a cost	the benefits or costs, or consistency with sections 4(e) and 10(a) of the FPA.
The NEPA document must summarize and incorporate Michigan EGLE's certification conditions and commit the licensee to adhering to the conditions as part of any license issued.	Michigan DNR	No, this is an administrative matter, not a specific fish and wildlife measure.	Unknown – recommendation lacks specificity needed to estimate a cost	No. Michigan EGLE has not issued a certification for the project; therefore, this EA does not analyze any conditions associated with the certification. However, section 401(d) of the CWA provides that any certification shall become a condition of any federal license that authorizes construction or operation of a project.
To protect monarch butterfly, promote native pollinator habitat and avoid use of chemicals or other activities that could be harmful to the butterfly.	Michigan DNR	Yes	Unknown – recommendation lacks specificity needed to estimate a cost	No. Michigan DNR has not provided specific measures to promote pollinator habitat; therefore, staff cannot analyze the benefits or costs, or consistency with sections 4(e) and 10(a) of the FPA.
Any license issued by the Commission should include provisions to protect migratory birds, herpetofauna, bats, and bat roosting areas.	Michigan DNR	Yes	Unknown – recommendation lacks specificity needed to estimate a cost	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because Michigan DNR has not provided specific measures or identified specific species; therefore, staff cannot analyze the benefits or costs, or consistency with sections 4(e) and 10(a) of the FPA.

Recommendation	Entity	Within the Scope of Section 10(j)	Levelized Annual Cost	Recommend Adopting?
Develop an invasive species management plan with the measures proposed by Northern States and the following additional measures: (1) management actions to prevent the spread of invasive species; (2) monitoring on an annual basis; and (3) active control efforts and reporting of suspected and confirmed invasive species.	Michigan DNR	Yes	$35,444	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because the benefits do not outweigh the costs.
Develop a land management plan with provisions to maintain and protect the project's aquatic and terrestrial habitats.	Michigan DNR	Yes	Unknown – recommendation lacks specificity needed to estimate a cost	No. Measure is inconsistent with sections 4(e) and 10(a) of the FPA because Michigan DNR has not provided specific measures or identified specific species; therefore, staff cannot analyze the benefits or costs, or consistency with sections 4(e) and 10(a) of the FPA.

APPENDIX K

COMPREHENSIVE PLANS

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APPENDIX L

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APPENDIX M

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