

FINAL ENVIRONMENTAL ASSESSMENT

**AMENDMENT OF PROJECT EXEMPTION TO UPGRADE TURBINE
GENERATOR UNITS**

LAKE BYLLESBY HYDROELECTRIC PROJECT
FERC No. 6299
Minnesota



Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
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ACRONYMS

Advisory Council	Advisory Council on Historic Preservation
AIS	aquatic invasive species
APE	Area of Potential Effect
C	Celsius
CFR	Code of Federal Regulations
cfs	cubic feet per second
Commission or FERC	Federal Energy Regulatory Commission
CWA	Clean Water Act
DO	dissolved oxygen
D2SI	Division of Dam Safety and Inspections
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ft	feet
FWS	U.S. Fish and Wildlife Service
HPMP	Historic Properties Management Plan
IBI	Index of Biological Integrity
m	meter
msl	mean sea level
MW	megawatt
Minnesota DNR	Minnesota Department of Natural Resource
MPCA	Minnesota Pollution Control Agency
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum of 1929
NHIS	Natural Heritage Information System
NHPA	National Historic Preservation Act
PA	Programmatic Agreement

Section 106	Section 106 of the National Historic Preservation Act
Section 401	Section 401 of the Clean Water Act
Section 7	Section 7 of the Endangered Species Act
THPO	Tribal Historic Preservation Officer
WQC	Water Quality Certification under section 401 of the Clean Water Act
µg/L	Micrograms per Liter

ENVIRONMENTAL ASSESSMENT

**Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
Washington, DC**

**Lake Byllesby Hydroelectric Project
FERC No. 6299-014**

1.0. APPLICATION

Application Type: Amendment of Project Exemption

Dates Filed: October 31, 2018, April 24, 2020

Applicant's Name: Dakota County

Water Body: Cannon River

County and State: Dakota and Goodhue Counties, Minnesota

Federal Lands: The project does not occupy any federal lands.

2.0 PURPOSE OF ACTION

Dakota County (exemptee), exemptee for the Lake Byllesby Hydroelectric Project (Lake Byllesby Project or project), requests an amendment to its project exemption in order to modify, repair, or replace several project features associated with a proposed upgrade to its turbine generator units.¹ The work would primarily involve construction to the gate structures, intake pier, and buttressing; replacement of the draft tubes, turbines, and other generation equipment; repair or restoration of several historic features of the powerhouse; and restoration work in the downstream river channel. The replacement of the turbines and related generation equipment would increase the project's maximum intake design flow from 650 cubic feet per second (cfs) to 1,050 cfs, resulting in an increase in installed generating capacity from 1.9 megawatts (MW) to an estimated 4.0 MW.

¹ Order Granting Exemption for Licensing of a Small Hydroelectric Project of 5 MW or Less (30 FERC ¶ 62,146), issued February 8, 1985.

In order to install the new turbine generator units, the penstocks, draft tubes and station switchgear will be replaced, and the intake bays will need to be modified. The exemptee intends to additionally install a trashrack in the north bay. Additionally, the powerhouse structure (downstream walls, floor, lower roof, upper roof, control room, entrance doors, and windows) would need to be removed and replaced to accommodate the work. To maintain consistency with the historic architecture, the building exterior would consist of precast panels colored to match the upper level existing east powerhouse wall concrete, including color matched caulk, and have simplified detail in the corbels. However, the window openings would be standard sizes opposed to a replication of current window sizes, the lower building roof would be raised, and the control room would be slightly taller than in the original design.

3.0. PROJECT DESCRIPTION

The Lake Byllesby Project is located on the Cannon River, near Cannon Falls, Minnesota. The project is comprised of a main concrete dam with earthen embankments and an earthen perimeter dike. The perimeter dike is located northwest of the main dam and provides a smaller drainage course to prevent overtopping. The main dam, between earthen embankments, consists of a gated spillway, non-overflow wall, overflow Ambursen spillway, sluice outlet, non-overflow Ambursen dam, and a powerhouse with 5 bays.

The gated spillway is 146 feet long with 2, 65-foot-long bays and a crest elevation of 844.8 feet (ft) National Geodetic Vertical Datum of 1929 (NGVD). The steel crest gates are controlled via hydraulics and have a closed top elevation of 857.2 ft NGVD. The 396-foot-long, concrete Ambursen structure has a crest elevation of 854.2 ft NGVD and is controlled via trip gates on the southern end and crest gates on the northern end with a maximum closed elevation of 857.2 ft NGVD. There is also 1 sluice gate on the base of Bay S-2 of the Ambursen structure, which discharges into a concrete-lined stilling basin.

The project powerhouse contains 3 turbine generator units, switchgear, a small backup generator, a hydraulic power unit that operators 2 adjacent spillway crest gates and other appurtenant equipment. The powerhouse forebay has 5 intake bays. The powerhouse also consists of an observation platform, transformer rooms, a turbine generator room, and a turbine pit.

The powerhouse's 5 bays house 2 double-runner horizontal Francis turbines, each with a capacity of 550 kilowatts (kW), and 1 single-runner horizontal Francis turbine

with a capacity of 800 kW for a total installed capacity of 1,900 kW.² Of the remaining 2 bays, the middle bay includes provisions for the original 50 kW exciter unit and the northernmost bay remains unused.

4.0 PROPOSED ACTION AND ALTERNATIVES

4.1 Proposed Action

The exemptee is proposing to replace the 3 existing turbine generator units with 2 vertical Saxo-type Kaplan turbines. The new turbines would be rated for 2,263 kW each; however, the installed nameplate capacity would be 4,000 kW total, rated at full flow during the winter pool elevation of 853.7 ft NGVD. The replacement of the turbines and related generation equipment would increase the project's maximum intake design flow from 650 cfs to 1,060 cfs. At flows greater than 200 cfs, the turbines are expected to be 90 percent efficient and the generators are expected to be 96 percent efficient. The exemptee's application includes specifications for the manufacturing and installation of the proposed, upgraded turbine generator units.

Installation of the proposed turbine generator units would necessitate the replacement of the existing penstocks, draft tubes, and station switch gear. Accessing these features requires that significant portions of the historic powerhouse structure be replaced, including the downstream walls, floor, lower roof, upper roof, control room, entrance doors, and windows. The exemptee has included a number of measures to minimize or mitigate for these changes, which will be discussed in Section 6.9. The exemptee would also modify the intake and trash racks to supply water to the proposed units. The new turbines would be installed in the outer bays. The exemptee indicates that the middle bay would remain empty but could be modified to accommodate a low flow unit in the future, which is not a part of the current application.

The exemptee does not propose any modifications to the seasonal reservoir elevation requirements. Moreover, the project would continue to be operated as run-of-river, as required by the project's exemption order. The application, however, indicates that the increased hydraulic capacity of the powerhouse would alter flows immediately downstream of the project for an estimated 100 ft. While the total flows released downstream would not change, a larger proportion of the flows would be released through the powerhouse rather than over the spillway. The minimum and maximum flow capacity for each of the proposed turbine generator units would be 100 and 530 cfs,

² The exemption application filed in 1983 listed the generators units at 500 kW, 500 kW, and 750 kW for a total capacity of 1,750 kW; however, the units were subsequently rehabilitated.

respectively. As such, the exemptee indicates that it would only spill when inflows are above 1,060 cfs. The exemptee does not propose any other changes to its management of flows or reservoir elevations.

4.2 Action Alternatives

Project Decommissioning

No party has suggested that project decommissioning would be appropriate, and there is no basis for recommending it. The project provides a viable, safe, and clean renewable source of power. If the project were to be decommissioned, its contribution to renewable energy generation would be irreplaceable. Thus, project decommission is not a reasonable alternative and has not been considered in this analysis.

4.3 No-Action Alternative

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing exemption, and no new environmental protection, mitigation, or enhancement measures would be implemented. The installed capacity would remain at 1,900 kW. We use this alternative to establish the baseline environmental conditions for comparison with other alternatives.

5.0 STATUTORY AND REGULATORY REQUIREMENTS

Section 401 of the Clean Water Act

Under section 401(a)(1) of the Clean Water Act (CWA), a license applicant must obtain either a water quality certification (WQC) from the appropriate state pollution control agency verifying that any discharge from the project would comply with applicable provisions of the CWA, or a waiver of such certification.³ A waiver occurs if the state agency does not act on a request for a certification within a reasonable period of time, not to exceed 1 year after receipt of such a request. However, because this is an amendment to an exemption from licensing, a WQC is only required if the Commission determines that the amendment would have a material adverse impact on the water quality in the discharge from the project.⁴

³ 33 U.S.C. § 1341.

⁴ 18 C.F.R. § 4.38(f)(7)(iii).

The National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA⁵) and its implementing regulations⁶ requires that federal agencies “take into account” how each of its undertakings could affect historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.⁷ 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 this document, we also use the term “cultural resources” for properties that have not been evaluated for eligibility for the National Register. Cultural resources represent items, structures, places, or archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic. Section 106 also requires that the Commission seek concurrence with the state historic preservation office on any finding involving effects or no effects on historic properties, and consult with interested American Indian tribes or Native Hawaiian organizations that attach religious or cultural significance to historic properties that may be affected by an undertaking.

In response to the exemptee’s February 16, 2018 request, Commission staff designated Dakota County as its non-federal representative for the purposes of conducting section 106 consultation under the NHPA on March 12, 2018. Pursuant to section 106, and as the Commission’s designated non-federal representative, Dakota County initiated consultation with the Minnesota State Historic Preservation Officer (Minnesota SHPO) and federally recognized tribes to identify historic properties, determine the eligibility of cultural resources for listing on the National Register, and assess potential adverse effects on historic properties within the project’s area of potential effect (APE).

To meet the requirements of section 106 of the NHPA, we intend to execute a Programmatic Agreement (PA) with the Minnesota SHPO for the protection of historic

⁵ 54 U.S.C. §§ 306108 et seq. (2016). The National Historic Preservation Act was recodified in Title 54 in December 2014.

⁶ 36 C.F.R. 800.5(a)(2)(vii).

⁷ An undertaking means “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license, or approval.” 36 C.F.R. § 800.16(y). Here, the undertaking is the proposed amendment to the Lake Byllesby Hydroelectric Project.

properties from the effects of amending the project's exemption to, in part, modify, repair or replace several project features associated with a proposed upgrade to its turbine generator units. A draft PA was issued for review and comment on June 1, 2020. Comments on the draft PA were filed by the Minnesota SHPO on July 28, 2020. The terms of the PA would ensure that Dakota County protects all historic properties identified in the project's APE from the adverse effects of the undertaking through the proposed mitigation measures.

The Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally-listed threatened or endangered species or result in the destruction or adverse modification of the critical habitat of such species.⁸ No critical habitat has been identified within the Upgrade Project Area; however, the northern long-eared bat (*Myotis septentrionalis*, federally threatened, state special concern), the Minnesota dwarf trout lily (*Erythronium propullans*, federally endangered, state endangered), and the prairie bush-clover (*Lespedeza leptostachya*, federally threatened, state threatened) potentially occur in or near the project area. Potential effects to these species and the exemptee's proposed mitigation measures are discussed in Section 6.8. In conclusion, we find that the dwarf trout lily and prairie bush-clover are not present in the Upgrade Project Area. The northern long-eared bat may occur in the vicinity of the project; however, the proposed construction is unlikely to modify any preferred habitat or resources. We conclude that the proposed action would have no adverse effect to federal threatened or endangered species.

6.0 ENVIRONMENTAL ANALYSIS

6.1. Scope of the Analysis

The temporal scope of analysis includes a discussion of the past, present, and reasonably foreseeable future actions and their effects on the following resource areas: geology and soils; water quantity and flow; water quality; fisheries and aquatic resources; botanical, wildlife, and wetland resources; threatened and endangered species; cultural

⁸ 16 U.S.C. § 1536. An undertaking means a "project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license, or approval." 36 C.F.R. § 800.16 (2019). Here, the undertaking is the proposal to amend the Lake Byllesby Hydroelectric Project.

and historic resources; and recreation. Because the proposed action would affect resources differently, the geographic scope for each resource may vary.

6.2 General Description of the Project Area

The Cannon River is a 112-mile-long tributary of the Mississippi River (USGS 1981). Located in southeast Minnesota, the Cannon River drains approximately 1,460 square miles through Dakota, Goodhue, La Sueur, and Rice counties (USGS 1981). In the project vicinity, the topography is largely rolling hills and flat land at elevations ranging from 670 ft NGVD near the convergence of the Cannon and Mississippi Rivers to 1,350 ft NGVD in the southeastern portion of the watershed (USDA 2018).

Historically, the 946,440-acre Cannon River watershed was home to Native American villages that used the Cannon and Straight Rivers for navigation and fishing. Fur trading, logging, and rich tillable soil brought European settlers to the region in the 1860s. Subsequently, the Cannon River watershed has undergone considerable land use modification, including the plowing of its native prairies, harvesting of its hardwood forests, draining of its wetlands, and modifications to its natural stream channels. Dams along the Cannon and Straight rivers were constructed to support the operation of saw mills and grist mills to supply the growing Minneapolis and St. Paul areas. Additionally, many smaller dams were placed to maintain lake levels and control flooding. (MPCA 2014).

Currently, the dominant land use within the Cannon River watershed is agriculture (76.3 percent) followed by forested lands (9.4 percent), wetlands (3.1 percent), developed lands (8.4 percent), and open water (2.9 percent) (MPCA 2014). Water from the Cannon River is now used for a variety of purposes including drinking water, habitat and riparian corridors for wildlife, and recreation (MPCA 2014).

The Lake Byllesby Project is located approximately 13 miles downstream of a privately-owned non-powered dam, and there are no dams in the 27 miles downstream before the confluence of the Cannon and Mississippi rivers (Corps 2016).

6.3 Geology and Soils

6.3.1 Affected Environment

The project is within the Greater Metropolitan Area of the Twin Cities (Minneapolis and St. Paul). Dakota County is located at the convergence of 3 major rivers at the northern and eastern edges of the county (both the Minnesota and the Saint Croix with the Mississippi River). The Cannon River cuts across the south of the county. The southern 2-thirds of the county is dominated by sprawling farmland and small towns. The project is located in the Eastern Iowa and Minnesota Till Prairies major land

resources area (USDA 2014). The geology of this area is a mix of glacial till and outwash deposits with clay, silt, sand and gravel. Karst features exist with shallow depth of soils and glacial material covering limestone, but no karst features are identified in the project vicinity. The Cannon River watershed represents a transition between the driftless terrain of the southeast Minnesota and the glaciated lands of south-central Minnesota (MPCA 2018a). Overall, the geology of the Cannon River watershed has soil topped plateaus of loess that are deeply dissected by river valleys (USDA NRCS 2007). Generally, lands surrounding the project area are agricultural, which is consistent with the dominant land use in the Cannon River watershed. The bedrock geology at the project is classified as Lower Ordovician (Paleozoic). In general, Lower Ordovician is described as “dolostone, sandy to silty dolostone, and sandstone; includes the Shakopee Formation and Oneota Dolomite of the Prairie du Chien Group” (Jirsa et al. 2011). The seismic hazard in the project region is low (USGS 2014).

6.3.2 Environmental Effects

Land-disturbing activities for the proposed action include the construction of a new access road. The soils in the area of the proposed access road have been previously disturbed. Currently, the location of the proposed access road is grass turf. The new access road will be permanent; and it will be paved over a gravel base. In addition, a temporary access road will be required for the proposed action. A portion of the temporary access road is in an area that is currently grass and another portion is in the riverbed adjacent to the northern shoreline. Clean gravel material (planned as 3-inch diameter or larger) will be used for temporary access road. Staging areas will be used during construction for job trailers, equipment parking, and construction materials. The staging areas will be partially covered with gravel to minimize soil disturbance. Upon completion of the proposed action, all disturbed areas will be repaired and reseeded as needed and outlined in the Revegetation and Restoration Plan (filed as Appendix C of the April 24, 2020 addendum). A long-term storage area will be utilized to store rock and debris from the proposed action. As this storage area was previously disturbed as a quarry, no concerns relative to geological and soil resources have been identified for the proposed action.

The exemptee is also proposing to stabilize the weathered cliff between the substation and existing access road to ensure erosion does not become a problem in this area. The exemptee will stabilize this cliff with a concrete retaining wall on spread footing (west half) and caisson/pile footings (east half). The exemptee is also proposing to remove debris in the riverbed and restore the tailrace channel by shaping and restoring contours. The channel restoration is proposed to follow the available 1936 contours as reasonably possible. Once the proposed action is completed, the channel will consist of exposed bedrock between the powerhouse and 40 ft downstream. In the Upgrade project area outside of this exposed bedrock area, the exemptee anticipates that approximately 2 to 3 ft of natural riverbed cobble will remain on top of the bedrock. The natural riverbed

cobble is expected to remain mobile and shift in location over the years due to spillway operations (not powerhouse operations). The shoreline in the proposed action area is cement-lined, rock, or wooded. Shoreline erosion has not been noted as a concern in this area and the exemptee will comply with all codes and regulations related to sedimentation and erosion control during the construction process. Furthermore, the exemptee will implement erosion control measures during construction of the proposed action as outlined in the Erosion Control Plan, (Appendix A-1 of the application). Following construction, the exemptee will revegetate and restore areas of disturbance. These proposed measures will minimize soil erosion and sedimentation during construction. Once in operation, the project should have little or no effect on geology and soils.

6.3.3 Staff Conclusion

Any potential effects to geology and soils in the proposed action area would be avoided or mitigated by implementation of the Erosion Control Plan and the Revegetation and Restoration Plan. These proposed measures will minimize soil erosion and sedimentation during construction. Once in operation, the project should have little or no effect on geology and soils. Accordingly, we conclude there would be no permanent adverse effects on geological resources by the proposed action.

6.4 Water Quantity and Flow

6.4.1 Affected Environment

The Cannon River at the project dam has a watershed area of 1,146 square miles (USGS 2018a). Flow in the Cannon River is recorded at the USGS stream gage 05355200 (Welch gage), located at Welch, Minnesota, approximately 20 miles downstream from the project dam. The Welch gage watershed area is 1,340 square miles (USGS 2018b). The exemptee provided monthly flow data at the Welch gage for the period from November 1997 through November 2017. The average monthly flow ranged from 413 cfs (in January) to 1,850 cfs (in June). Based on the records of the same period, the minimum daily mean recorded was 139 cfs. A peak flow of 36,100 cfs was recorded on April 8, 1965 (period of record from June 1911 through May 2017).

The exemptee operates the project in a run-of-river mode with seasonal pool adjustments. The target reservoir water surface elevation is 856.7 ft NGVD in the summer (beginning May 15) and 853.7 ft NGVD in winter (beginning October 1). At normal pool elevation 856.7 ft NGVD, the reservoir surface area is 1,432 acres (with reservoir storage at 12,100 acre-feet). During the annual transition from winter to summer elevations, a minimum discharge of 200 cfs, or 50 percent of inflow, whichever is greater, is maintained. During the annual transition from summer to winter elevations, the annual drawdown begins on October 1, at a rate of approximately 0.05 ft/day, for

approximately 60 days. The reservoir is then maintained at 853.7 ft NGVD until May 15. During the annual transition from winter to summer elevations, the period required to refill to a summer elevation varies, as it is dependent on precipitation and snow melt.

6.4.2 Environmental Effects

The exemptee is not proposing any changes to project operation that would affect the water quantity at the project. The exemptee would modify the flow that passes through the project powerhouse by generating electricity with water that is currently spilled. The proposed action would result in an additional 410 cfs of water flow through the powerhouse (for a maximum 1,060 cfs through the powerhouse) and less water spilled over the spillway. The total volume of water moving downstream of the project will not change. The proposed action will affect the flow in the river up to 100 feet downstream of the powerhouse. However, the overall flow conditions of the river will not change because additional water passing through the powerhouse would otherwise have been discharged over the spillway and through the sluice gate during periods of high flow (the pool level will remain stable). Therefore, it is not expected that the proposed action would affect water quantity at the project.

6.4.3 Staff Conclusion

The exemptee is not proposing to change its normal run-of-river operations. It is only changing the proportion of water being discharged at each location when the exemptee is generating. Therefore, it is not expected that the proposed action would affect water quantity at the project.

6.5 Water Quality

6.5.1 Affected Environment

Lake Byllesby as well as the Cannon River below the project are designated class 2b aquatic recreation, class 2b warm water aquatic consumption and class 2b warm water aquatic life (USEPA 2016a, USEPA 2016b). As a result of land use in the project's vicinity, sedimentation and nutrient loading in the proposed action area is very high, and water residency time is only 10 to 40 days (Dakota County 2018). Under section 303(d) of the CWA, the waters above and below the project dam are both listed as impaired (MPCA 2018b, USEPA 2016a, USEPA 2016b). Lake Byllesby is listed as impaired for the designated use of aquatic consumption due to mercury in fish tissue and impaired for the designated use of aquatic recreation due to nutrient/eutrophication biological indicators (MPCA 2018); however, Lake Byllesby has not been assessed for the designated use of warm water aquatic life (USEPA 2016b). In the Upgrade Project Area, the Cannon River is listed as impaired for the designated use of aquatic consumption due to polychlorinated biphenyls (PCBs) in fish tissue and impaired for the designated use of

aquatic life due to aquatic macroinvertebrate bioassessments (MPCA 2018b). The Cannon River has an assessment status of good for the designated use of aquatic recreation (USEPA 2016b).

The U.S. Environmental Protection Agency (EPA) approved the following site-specific criteria: total phosphorus less than 90 micrograms per liter ($\mu\text{g/L}$); chlorophyll-*a* less than 30 $\mu\text{g/L}$; and secchi disk visible past 0.8 meters (m) (USEPA 2011). Minnesota has adopted a watershed approach to address the state's 80 major watersheds. Minnesota Pollution Control Agency's (Minnesota PCA) watershed approach incorporates water quality assessment, watershed analysis, public participation, planning, implementation, and measurement of results into a 10-year cycle that addresses both restoration and protection. The most recent Cannon River Watershed Restoration and Protection Strategies Report which outlines and prioritizes protection strategies to address water quality was approved by Minnesota PCA in 2016 (CRWP 2016). The counties, local planning bodies, and watershed districts are currently working on the One Watershed One Plan for the Cannon River Watershed to align local water resource planning efforts to meet state requirements (DCSWCD 2018).

6.5.2 Environmental Effects

The project would continue to be operated in run-of-river mode; however, the proposed capacity increase would reroute as much as 410 cfs through the powerhouse that would otherwise flow over the spillway, resulting in a maximum 1,060 cfs through the powerhouse. The spillway and bypass converge after approximately 100 ft, at which point the riverbed steepens and riffle habitat becomes prevalent. Generally, the rerouting of flows could cause a change in water quality; however, the topography immediately downstream of the project is conducive to naturally oxygenating project waters. Moreover, the project intakes would remain in their current, upper-water-column position. There would be no increase to colder, lower oxygenated water being passed downstream. Similarly, the proposed upgrade should not cause any significant, long-term effects to water temperature or suspended solids as compared to current conditions. The project intakes are located approximately 14 ft above the silt level.

During construction, the exemptee proposes to construct a temporary cofferdam in the tailrace in order to dewater the construction area. The cofferdam would be approximately 150 ft long, 8 ft high, and have a base width of 16 ft. The exemptee's application includes a Dewatering Plan wherein it details dewatering and re-watering rates, cofferdam construction and composition, as well as a tentative schedule. The exemptee anticipates that the temporary cofferdam would be in place for approximately 2 months.

To comply with Section 404 of the CWA, the exemptee obtained a permit from the Corps prior to conducting any in-water work. The Nationwide Permit 17, issued

June 4, 2020, requires stringent protection measures to ensure that river conditions are not changed by any construction.

6.5.3 Staff Conclusion

Any potential effects to the water quality in the proposed action area would be avoided or mitigated by implementation of the Dewatering Plan and compliance with the conditions of Nationwide Permit 17. Existing water quality is not currently pristine; however, it does not threaten aquatic communities nor is that likely to change under the proposed action. Accordingly, we conclude there would be no permanent adverse effects on water quality resources by the proposed action.

6.6 Fisheries and Aquatic Resources

6.6.1 Affected Environment

The Cannon River has relatively high fish diversity, with 42 documented species above the dam and 52 fish species below the dam. The diversity of fish species in the Cannon River below the dam increased following the removal of the Welch Dam in 1994 (CRWP 2011). Fish species recorded in the project reservoir primarily consist of: black bullhead; black crappie; bluegill; channel catfish; green sunfish; hybrid sunfish; largemouth bass; northern pike; pumpkinseed; smallmouth bass; walleye; white bass; white crappie; yellow bullhead; yellow perch; bigmouth buffalo; bowfin; carpsucker; common carp; freshwater drum; golden redhorse; greater redhorse; quillback; shorthead redhorse; silver redhorse; white sucker; bluntnose minnow; emerald shiner; golden shiner; and tadpole madtom (MDNR 2018a). Additionally, Lake Byllesby is stocked with walleye fingerlings every 1 to 2 years (MDNR 2018b). Future stocking of walleye fingerlings in the project reservoir is described in the Minnesota Department of Natural Resource's (Minnesota DNR) Lake Management Plan (MDNR 2009). Commercial fishing has been periodically conducted at Lake Byllesby since 1923 (MDNR 2009), most recently for rough fish, buffalo, and carp (LBIA 2017). The Minnesota DNR conducts regular fishery population assessments in the Cannon River at a station less than 2 miles downstream of the project. In 2011, the Minnesota DNR's survey found 25 fish species, of which there were 0 special concern species, 2 pollution intolerant species, 5 piscivore species, 8 gravel spawning species, 8 game fish species, 1 exotic species, and 4 darter species (MDNR 2018c). This resulted in a fish Index of Biological Integrity (IBI) score of 75 and fish rating of "Good." In the 2000 survey, the fish IBI score at the site was 67, also qualifying as rating of "Good." IBI scores are used to assess the overall health of the fish assemblage based on the type and quantity of species observed during a survey period.

The Minnesota DNR's Stream Management Plan for the Cannon River downstream of the project focuses on building and maintaining a quality smallmouth bass

population and fishery. The Minnesota DNR assesses the abundance and size structure for smallmouth bass, as well as for other gamefish. The most recent assessment was conducted on June 6 and 8, 2017 (MDNR 2017). Only gamefish were collected during these surveys, including: black crappie; bluegill; brown trout; channel catfish; flathead catfish; largemouth bass; northern pike; muskellunge; rock bass; sauger; smallmouth bass; walleye; white bass; and yellow perch. Overall, gamefish composition of the 2017 survey was consistent with previous surveys (MDNR 2017).

In the middle Cannon River upstream of Lake Byllesby, the Minnesota DNR most recently conducted an electrofishing assessment of gamefish on May 27, 2010 (MDNR 2011). Seven species of gamefish were collected with a total of 92 fish. Smallmouth bass (44 collected) and channel catfish (35 collected) were the most abundant. Walleye, bluegill, white bass, largemouth bass, and northern pike were also present in the samples. All gamefish species captured in the 2010 survey were also found downstream of the dam during the 2017 surveys, as mentioned above. Following the removal of the Welch Dam in 1994 and the dam at Cannon Falls in 2001, there are no dam barriers between the project and the confluence of the Cannon River with the Mississippi River (CRWP 2016). The lake sturgeon population in the Mississippi River is increasing, and based on anecdotal data, sturgeon may travel upstream as far as the project dam (MDNR 2015). Habitat quality below the project is such that sturgeon moving upstream from the Mississippi River could potentially use the river for spawning and for nursery areas.

The MPCA lists the Cannon River reach below the dam as impaired for aquatic life use (MPCA 2014). Above the dam, in Lake Byllesby, there was insufficient information to determine the support status for aquatic life; however, Lake Byllesby is impaired for aquatic fish consumption due to mercury in fish tissue (MPCA 2014, MPCA 2018). The Cannon River is also listed as a water impaired for the designated use of aquatic consumption due to PCBs in fish tissue and impaired for the designated use of aquatic life due to aquatic macroinvertebrate bioassessments (MPCA 2018). There is no essential fish habitat in the Upgrade Project Area or in the project vicinity (NOAA 2018).

The Minnesota DNR tracks aquatic invasive species (AIS) throughout the state. Lake Byllesby is listed as an infested water due to the presence of flowering rush (MDNR 2018d). Other aquatic invasive plant species that occur in Lake Byllesby include reed canary grass, hybrid and narrow leaf cattails, and purple loosestrife (Dakota County 2018). Common carp are also found in Lake Byllesby and in the Cannon River downstream of the dam (Dakota County 2018, MnDNR 2018c). Private harvest of common carp is being used to actively manage the population at Lake Byllesby, which reduces populations but does not eradicate them (Dakota County 2018). Dakota County has an Aquatic Invasive Species Plan, which outline measures to prevent the spread of AIS (Dakota County 2017). Zebra mussels have not been found in Lake Byllesby (Dakota County 2017). At Lake Byllesby, the prevention of AIS, and in particular zebra mussels, is a top management objective for Dakota County (Dakota County 2017).

Dakota County has been utilizing AIS Prevention Aid from the state to provide education and awareness, inspect and decontaminate watercrafts, and provide grant funding to lake associations, cities and townships. AIS Prevention Aid has also contributed to the exemptee hiring AIS watercraft inspectors at Lake Byllesby.

In the exemptee's application, it states that a mussel survey downstream of the dam was requested by the Minnesota DNR during initial consultation on the proposed turbine upgrade. On July 25, 2018, the Minnesota DNR conducted a mussel survey on behalf of the Exemptee. No mussels were found and the Minnesota DNR confirmed that they have no further concerns related to mussels for the proposed Upgrade Project. In May 2015, the Minnesota DNR conducted a mussel survey in Lake Byllesby, upstream of the dam. The survey found 8 species of mussels, including the state threatened mucket (*Actinonaias ligamentina*) at 6 of the 33 sampling sites. The most abundant mussel species found was the pink heelsplitter (*Potamilus alatus*). The survey did not find any federally endangered species.

6.6.2 Environmental Effects

The exemptee does not intend to dewater Lake Byllesby for construction and would maintain the approved reservoir levels. As such, there are no anticipated changes to water quality or aquatic habitat upstream of the project. For dewatering downstream of the dam, the exemptee has provided a Dewatering Plan (Appendix A-2 of the application). The tailrace and powerhouse foundation would be dewatered with a temporary cofferdam during construction. The temporary cofferdam would be comprised of sandbags or concrete blocks, and the design will be stamped by a professional engineer. The temporary cofferdam is anticipated to be installed for approximately 2 months and removed following construction.

To prevent the introduction or spread of AIS, the exemptee has committed to clean and decontaminate all equipment, vehicles, gear, and clothing. Equipment would be cleaned prior to arriving to the proposed construction area. If the equipment, vehicles, gear, or clothing arrives at the site with soil, aggregate material, mulch, vegetation, or animals, it would be cleaned by brush/broom, compressed air, or pressure washer in a staging area. All equipment, vehicles, gear, and clothing used for work in AIS infested waters would be thoroughly decontaminated for invasive species prior to being used in non-infested waters.

Because there were no mussels found downstream of the project, there are no anticipated effects to mussel populations.

The proposed action would result in higher flow through the turbines, modifying the discharge location for some portion of the existing flow. The total flow through the project would remain unchanged. Currently, flow through the powerhouse reaches a

maximum of 650 cfs, after which, excess water is discharged over the spillway and through the sluice gate. Following the proposed action, flow through the powerhouse would reach a maximum of 1,060 cfs, after which excess water will be discharged over the spillway and through the sluice gate. The proposed change in flow is estimated to affect the flow in the river up to 100 ft downstream of the powerhouse. The overall flow conditions in the river would not change, as the additional water passing through the powerhouse turbines would otherwise pass over the spillway during periods of high flow.

The proposed action would also result in changes to the turbines. The exemptee proposes to replace 2 double runner, horizontal Francis turbines and 1 single runner horizontal Francis turbine with double-regulated vertical Saxo-type Kaplan. The proposed turbines are considered to be fish friendly and operate at a higher efficiency than the existing Francis turbines. The trash rack spacing at the project is currently 2 inches, and the exemptee proposes to retain the existing trash racks following upgrades. Studies on entrainment and injury/mortality potential on fish that pass through trash racks and go on to pass through turbines have shown extremely high survival and low injury rates in bluegill, yellow perch, channel catfish, and buffalo (survival of 96-100%) and lake sturgeon fingerlings and yearlings > 90% (Normandeau 2009, Normandeau 2015). Smaller trash rack spacing used in the upper Midwest has resulted in higher incidents of trash rack fouling and high debris loading, which cause higher pressure drop over the units, lower operating efficiency, and higher maintenance costs related to more frequent debris cleaning. Since the proposed Kaplan turbines are more fish friendly than the existing Francis turbines, maintaining the existing trash racks and 2-inch spacing at the project together should provide more fish protection than the existing combination without sacrificing operating efficiency and increasing maintenance costs. The Minnesota DNR concurred with the proposed retention of the trash racks with 2-inch spacing in their September 12, 2018 comments (Appendix E-1b). The FWS concurred with the Minnesota DNR in their October 10, 2018 comments (Appendix E-1b).

During consultation, FWS requested that approach velocities be kept at 2 feet per second or lower to minimize fish impingement to further protect the fishery. The exemptee incorporated this recommendation into the design for the proposed upgrade. The exemptee calculated that the approach velocities after the upgrade would range from 0.4 ft per second to 1.3 ft per second, to protect the fishery and minimize the risk of impingement.

6.6.3 Staff Conclusion

Any effects to the fisheries and aquatic resources in the proposed action area would be avoided or mitigated by implementation of the Dewatering Plan and adherence to the proposed design drawings. The limited downstream dewatering could potentially impact sessile organisms; however, none were observed during prior surveys. Additionally, the upgrade designs consider fish passage, and the improved turbine design

may serve to improve downstream passage survival. As such, we conclude there would be no permanent adverse effects on fisheries or aquatic resources by the proposed action.

6.7 Botanical, Wildlife, and Wetland Resources

6.7.1 Affected Environment

The project is in the Eastern Broadleaf Forest Ecological province and Oak Savannah ecological subsection of Minnesota, characterized by gently rolling plains with few lakes, well developed drainage networks, and fertile soil. The project proposed action area includes developed parkland and a gravel pit. The developed parkland contains bur oak (*Quercus macrocarpa*) and several non-native invasive plants including buckthorn (*Rhamnus cathartica*), Siberian elm (*Ulmus pumila*), alfalfa (*Medicago sativa*), and honeysuckle (*Lonicera sp.*). Native plants found in the gravel pit include cottonwoods (*Populus deltoides var. occidentalis*), porcupine grass (*Hesperostipa spartea*), sky blue aster (*Symphotrichum oolentangiense*), and silky dogwood (*Cornus amomum*). Non-native invasive plants found in the gravel pit include buckthorne, Siberian elm, smooth brome (*Bromus inermis*), and bird's foot trefoil (*Lotus corniculatus*) (Dakota County 2018).

Wildlife habitat within the proposed action area is limited. Wildlife habitat surrounding the proposed action area is an interspersed of small wood lots, scrub-shrub, open grassy fields, and shoreline. Mammalian wildlife likely to occur in and around the proposed action area include white-tail deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), chipmunk (*Tamias minimus*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), and coyote (*Canis latrans*). The Lake Byllesby impoundment and Cannon River provide suitable habitat for multiple species of waterfowl, wading birds, and shoreline birds. Avian species observed in and around the proposed action area include American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), black-capped chickadee (*Poecile atricapillus*), downy woodpecker (*Picoides pubescens*), indigo bunting (*Passerina cyanea*), mourning dove (*Zenaida macroura*), and wild turkey (*Meleagris gallopavo*). Reptilian and amphibian species likely to occur in and around the proposed action area include garter snake (*Thamnophis sirtalis*), painted turtle (*Chrysemys picta*), green frog (*Lithobates clamitans*), chorus frog (*Pseudacris maculata*), and American toad (*Anaxyrus americanus*) (Dakota County 2018).

National Wetlands Inventory (NWI) identifies 3 wetland types in the proposed action area: Lower Perennial River Unconsolidated Bottom (riverine); Limnetic Lacustrine Unconsolidated Bottom (limnetic); and Perennial Emergent (palustrine)

(USFWS 2018a).⁹ The riverine designation includes all wetlands and deep-water habitats within the Cannon River channel. The limnetic designation includes all wetlands and deep-water habitats within the Lake Byllesby impoundment. The palustrine designation refers to 2 small wetlands within the gravel pit. A wetland survey of the project boundary limits (2018 wetland survey) was conducted on behalf of the exemptee by Midwest Natural Resources, Inc., and a wetland delineation report was completed September 8, 2018 (MNR 2018). The survey determined there were no palustrine wetlands in the proposed action area. In the amendment application supplement filed April 24, 2020, the exemptee identifies a wetland (non-project wetland) previously delineated in 2012 for a separate project.¹⁰ The non-project wetland is just outside the area delineated in the 2018 wetland survey.

6.7.2 Environmental Effects

Staging of equipment and construction of some proposed features will necessitate minor ground disturbance. The plant communities in the staging areas and proposed access road will be disturbed by use of equipment and laydown of materials needed to complete the work. The exemptee has filed as part of its amendment application a Revegetation and Restoration Plan to minimize spread of invasive weeds and restore areas disturbed by construction. Operation of the project following completion of the project upgrade would not change significantly and would have no effect on botanical resources.

The resident wildlife will likely be disturbed by noise and activity associated with the replacement and construction of proposed project features. This may interrupt foraging and movement between habitats. The effects should only be temporary, however, and localized to the areas immediately adjacent to the proposed action area. The proposed action will not require destruction or significant modification of wildlife habitat. Operation of the project following completion of the proposed action would not change significantly and would have no additional effect on wildlife resources.

The proposed action would not require work in the Cannon River or Lake Byllesby itself and the 2018 wetland survey found no palustrine wetlands in the proposed action area. Therefore, there would be no effect to riverine, limnetic, or palustrine wetlands identified in the NWI. The non-project wetland would have approximately 0.06 acres temporarily filled to improve access to the project. After the work for the project upgrade is completed the temporary fill material would be removed, and the wetland

⁹ The NWI-mapped riverine, limnetic, and palustrine wetlands encompass 1.7 acres, 0.13 acres, and 0.24 acres within the proposed action area, respectively.

¹⁰ The non-project wetland was delineated during environmental studies for the Minnesota DNR Mill Town State Trail Project.

reseeded with a wetland rehabilitation seed mix. The exemptee has been authorized by Dakota County Soil and Water Conservation District to temporarily fill the non-project wetland with the condition it is rehabilitated as described above. In addition, the exemptee has submitted the amendment supplement to the U.S. Army Corps of Engineers for review as an addendum to the Nationwide 17 Permit it received for the project upgrade on January 18, 2019.

6.7.3 Staff Conclusion

The plant communities in the proposed action area are limited in diversity and any disturbance would be mitigated by the Revegetation and Restoration Plan. Similarly, wildlife habitat in the proposed action area is limited and any effects would be local and temporary. A very small portion of a non-project wetland would be temporarily filled and rehabilitated after the project upgrade work is complete. We conclude there would be no permanent adverse effects on botanical, wildlife, or wetland resources by the proposed action.

6.8 Threatened and Endangered Species

6.8.1 Affected Environment

There is no federally designated critical habitat located within the Upgrade Project Area; however, the project area may still be utilized by federal and/or state-listed rare, threatened, or endangered species (collectively, RTE species). RTE species were identified using the [FWS' Information for Planning and Conservation \(IPaC\) tool](#), which allows for RTE species searches within a specified project area. The site-specific IPaC search listed the northern long-eared bat (*Myotis septentrionalis*, federally threatened, state special concern), the Minnesota dwarf trout lily (*Erythronium propullans*, federally endangered, state endangered), and the prairie bush-clover (*Lespedeza leptostachya*, federally threatened, state threatened) as potentially occurring within the Upgrade Project Area.

Northern long-eared bat – The northern long-eared bat occurs throughout midwestern and eastern United States but is experiencing population declines due to white-nose syndrome, a fungal disease (USFWS 2018b). The northern long-eared bat hibernate in caves, sand mines, and iron mines during the winter (MDNR 2018e). In summer, the species is often associated with forested habitats, making use of tree roosts, especially near water sources (MDNR 2018e). Roosting sites are primarily trees with cavities, crevices, or loose bark (MDNR 2018e). The preferred forested habitats include fire dependent forest, mesic hardwood forest, floodplain forest, and subterranean (MDNR 2018e). Northern long-eared bat emerge at dusk to fly through the understory of forested areas feeding on a variety of insects. This species is included in the Minnesota Wildlife Action Plan as a Species in Greatest Conservation Need (MDNR 2016). There is evidence of historical and/or extant presence of the species in Dakota and Goodhue

counties; however, there are no known roost trees or hibernacula in the project area (MDNR 2018e, MDNR USFWS 2018). This species has the potential to occur in the project area, but the exemptee does not propose any land-clearing activities or habitat modification.

Minnesota dwarf trout lily – The Minnesota dwarf trout lily is a perennial plant species endemic to Minnesota (MDNR 2018e). This species prefers shade, and typical habitats include mesic hardwood forest and floodplain forest (MDNR 2018e). Its habitat is most commonly a wooded floodplain or river terrace, or a north-facing slope above or near a stream (MDNR 2018e). The plants typically occupy the lower part of the slope but may extend nearly to the top of the slope or descend into the level floodplain (MDNR 2018e). There is evidence of historical and/or extant presence of the species in Goodhue County. The species is not known to occur in the proposed action area (MDNR 2018e). Although it is possible that habitat for the species exists in the proposed action area, the exemptee did not propose any land clearing or disturbance in areas that could contain habitat. The proposed staging areas, long-term storage area, and access road would be located on open land or previously disturbed habitat. The river access area located east of the pedestrian bridge is on a south-facing slope and has been previously disturbed and is unlikely to contain this species.

Prairie bush-clover – The prairie bush-clover is a perennial plant that prefers full sun, and its typical habitat is upland prairie. In the southeastern part of the state, populations typically occur on the upper slopes of bluff prairies and are usually smaller and more isolated (MDNR 2018e). The majority of Minnesota populations occur in prairies that have been or are presently used as pasture (MDNR 2018e). There is evidence of historical and/or extant presence of the species in both Dakota and Goodhue counties (MDNR 2018e). The species is not known to occur in the Upgrade Project Area. Additionally, the habitat in the Upgrade Project Area is not preferable to the species, as it has been previously disturbed, is periodically mowed, and/or is forested.

The exemptee also requested Natural Heritage Information System (NHIS) data from the Minnesota DNR on May 22, 2018. NHIS-identified species are generally considered to be rare or significant; however, they are not necessarily protected under state or federal laws. The NHIS data provides detailed information on these species' locations. To provide updated locational information of the Upgrade Project Area, the NHIS data request was revised on June 4, 2018 (Appendix E-1a of the application). In general, 3 species were identified in the NHIS review: a mussel; a fish; and a snake species. More detailed results were filed as privileged on October 21, 2018, as the results contain locational information of state-listed species that the Minnesota DNR considers sensitive information not to be released to the general public.

As discussed in Section 6.6 above, the Minnesota DNR conducted a mussel survey immediately downstream of the dam on July 25, 2018. No mussels were found and the Minnesota DNR had no further concerns related to mussels in the Upgrade Project Area downstream of the dam. A May 2015 mussel survey in Lake Byllesby conducted by the Minnesota DNR resulted in the collection of the state-listed threatened mucket; however, muckets were not found in the sites closest to the Upgrade Project Area. The survey did not result in any findings of the federally-listed endangered Higgins eye or snuffbox mussels. The exemptee developed a Dewatering Plan (Appendix A-2 of the application). Should any mussels be found during the project upgrade, they would be relocated following the protocols described in the Dewatering Plan.

The NHIS review also identified a fish species. On July 20, 2018, the exemptee consulted with the Minnesota DNR regarding the potential concerns related to this fish species (Appendix E-1a). The Minnesota DNR stated that it would be possible for the fish to swim into the Upgrade Project Area; however, the Minnesota DNR did not have any specific concerns for this species as work on the riverbed should be avoided between March 15 and June 15 for spawning fish in general. The exemptee indicated that it would avoid all work on the riverbed between March 15 and June 15. The NHIS review also identified a snake species, for which the Minnesota DNR recommended using erosion control mesh made from wildlife-friendly materials. As described in Section 6.3 above, the exemptee's Revegetation and Restoration Plan (Appendix A-3 of the application) would require wildlife friendly erosion control netting in areas of potential snake habitat.

6.8.2 Environmental Effects

Because there is no federally-designated critical habitat in the Upgrade Project Area, no effects to critical habitat are expected. Staging of equipment and construction of some proposed features would necessitate minor ground disturbance; however, the exemptee and the Minnesota DNR have concurred that Minnesota dwarf trout lily and prairie bush-clover are not present in the Upgrade Project Area. Similarly, the northern long-eared bat may occur in the vicinity of the project; however, the proposed construction is unlikely to modify any preferred habitat or resources.

The NHIS review provided 3 additional rare or significant species: a mussel; a fish; and a snake species. As discussed above, mussel surveys of the Upgrade Project Area did not produce any mussels downstream of the project, where aquatic impacts would be most likely to occur. Additionally, the Dewatering Plan included with the application includes limits to the rate and duration of dewatering activities, which should provide ample time for aquatic species (the fish species identified by the NHIS process in particular) to relocate to undisturbed portions of the river. The proposed action would result in higher flow through the turbines, but the total flow through the project would not change. The proposed change in flow should redirect the flow in the river up to 100 feet downstream of the powerhouse. Regarding the snake species, the exemptee has indicated

that it would use wildlife friendly erosion control netting in areas of potential snake habitat. It is anticipated that with the implementation of the Dewatering Plan and Erosion Control Plan, and with the proposed continued operations, the proposed work would not adversely affect RTE species.

6.8.3 Staff Conclusion

After providing the agencies with the study and survey results during consultation, no agencies expressed concern with potential impacts to threatened and endangered species. Provided that the exemptee adheres to its application, it is unlikely that adverse effects would occur. Therefore, we conclude that the proposed action would have no adverse effect to federal or state threatened or endangered species. As such, staff recommends any approval of the proposed action include a requirement to avoid riverbed work between March 15 and June 15 and adhere to its Revegetation and Restoration Plan, Erosion Control Plan, and Dewatering Plan.

6.9 Cultural and Historic Resources

6.9.1 Affected Environment

Historic properties are cultural resources listed or eligible for listing in the National Register. Historic properties can be buildings, structures, or objects, districts (a term that includes historic and cultural landscapes), or sites (archaeological sites or locations of important events). Historic properties also may be resources of traditional religious and cultural importance to any living community; such as an Indian tribe or a local ethnic group, that meet the National Register criteria; these properties are known as traditional cultural properties. Cultural resources must possess sufficient physical and contextual integrity to be considered historic properties. For example, dilapidated structures or heavily distributed archaeological sites, although they may retain certain historical or cultural values, may not have enough integrity to be considered eligible.

Section 106 of the NHPA requires the Commission to evaluate potential effects on properties listed or eligible for listing the National Register prior to an undertaking. An undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including, among other things, processes requiring a federal permit, license or approval. Advisory Council on Historic Preservation (Advisory Council) regulations implementing section 106 define effects on historic properties as those that change characteristics that qualify those properties for inclusion for the National Register.

Determination of effects on historic properties first requires identification of any historic properties in the APE. The Advisory Council's regulations define the APE as "the geographic area or areas within which an undertaking may directly or indirectly

cause alterations in the character or use of historic properties, if any such properties exist. For this undertaking, the APE includes lands within the project boundary as well as lands outside of the project boundary where project construction and/or operation may affect historic properties. The APE includes all access roads, laydown areas, and other locations required during construction and a 100-foot buffer around these areas.

The Lake Byllesby Hydroelectric Project was originally built in 1911, and the facility was owned by Consumers Power Company until 1916, during which Consumers Power Company reorganized into Northern States Power Company. The facility was owned by the Northern States Power Company until 1969, when it was sold to Dakota County and Goodhue County. In 2009, Dakota County became sole owner in 2009. The facility was owned operated between 1967 and 1977. A major redevelopment and restoration process took place between 1977 and 1985 to restore facility operation.

In 2012, Dakota County conducted a phase II historic evaluation to evaluate the eligibility of the Lake Byllesby Hydroelectric Facility for listing in the National Register. The 2012 evaluation recommended the facility eligible for listing in the National Register as a discontinuous historic district under Criterion C for its significant engineering as an example of a rare Ambursen dam in Minnesota. The project powerhouse is a contributing element to the historic district, but was not recommended eligible under Criterion A. Contributing features in the historic district include the following: the north and south Ambursen dams, spillway, powerhouse, and perimeter dam. During initial consultation with the Minnesota SHPO, it was recommended that an updated phase II historic evaluation be conducted to verify the Lake Byllesby Hydroelectric Facility remains eligible for listing.

In June 2018, the exemptee conducted a cultural resources literature and archives review and concluded that although there are no known archaeological sites in the proposed area of the undertaking, several archaeological sites have been previously discovered in the vicinity of the project area. On September 10, 2018, the Minnesota SHPO provided comments regarding the exemptee's proposal to amend the project's exemption. In its review, the Minnesota SHPO said that it recommended that the exemptee conduct a phase I archaeological survey for all areas within the direct APE. On November 5 through 7, 2018, Dakota County conducted a phase I archaeological survey, and utilized the following techniques: shovel testing and surface reconnaissance. As a result of the survey, Dakota County discovered that the direct APE had been heavily disturbed by quarrying and spoil movement and storage. No artifacts or archaeological features were discovered during the survey. Thus, additional archaeological work was not recommended.

6.9.2 Environmental Effects

Effects on cultural resources within the APE can result from project-related activities such as reservoir operations, modifications to project facilities, or project related ground-disturbing activities. Effects also can also result from other forces such as wind and water erosion, recreational use (project and non-project related), vandalism, private and commercial development. Significant changes to powerhouse that would adversely affect the Lake Byllesby Project include: removing the walls and roof of the powerhouse to replace the powerhouse generation equipment and adding a new concrete substructure for the new turbine generator units. Dakota County proposes to replicate the appearance of the original powerhouse enclosure as much as possible. The original walls were constructed using cast-in-place concrete with large window openings that were subsequently infilled with concrete block. Dakota County says new walls will use precast concrete panels that will match the original walls in terms of color, proportion, and surface articulation to the extent possible. Precast panels are being proposed instead of cast-in-place concrete to facilitate cost-effective construction, and because the panels have an insulated core that will help alleviate moisture condensation issues that were problematic in the original structure. The new building enclosure will also include windows of similar size and proportion to the original building. The windows will utilize an aluminum curtain wall system with insulated double glazing. Dakota County also proposes to fabricate the project's powerhouse facade to closely match the original exterior design. This fabrication will be designed and completed in consultation with Minnesota SHPO.

Pursuant to the Commission's Tribal Policy,¹¹ the Commission has notified the following federally recognized American Indian tribes (Tribes) and invited their participation in Section 106 consultation for the Undertaking: Apache Tribe of Oklahoma, Cheyenne and Arapaho Tribes, Flandreau Santee Sioux Tribe, Fort Belknap Indian Community, Iowa Tribe of Kansas and Nebraska, Lower Sioux Indian Community in the State of Minnesota, Menominee Indian Tribe of Wisconsin, Prairie Island Indian Community in State of Minnesota, Santee Sioux Nation, Nebraska, Sisseton-Wahpeton Oyate of the Lake Traverse Reservation of South Dakota, Spirit Lake Tribe, North Dakota, Upper Sioux Community, Minnesota, Bay Mills Indian Community of Michigan, Bois Forte Band of Chippewa Indians, Fond du Lac Band of the Minnesota Chippewa Tribe, Lac Courte Oreilles Band of Chippewa Indians, Leech Lake Band of Chippewa Indians, Mille Lacs Band of Objibwe Indians, Mille Lacs Chippewa Tribe, Red Lake Band of Chippewa Indians of Minnesota, Shakopee-Mdwakanton Sioux Community of Minnesota, and White Earth Band of the Minnesota. No Tribes have requested to participate in the Section 106 consultation for the Undertaking.

¹¹ <https://www.ferc.gov/industries/hydropower/indus-act/order-2002/tribalpolicy.pdf>

On December 13, 2018, Dakota County provided its phase I archaeological survey report for review and comment. In a July 28, 2020 letter, the Minnesota SHPO said Lake Byllesby Hydroelectric Facility continues to retain sufficient integrity in order to be considered eligible for listing in the National Register of Historic Places. Therefore, Minnesota SHPO said the proposed work constitutes an adverse effect to historic properties pursuant to 36 C.F.R. 800.5(a).

In order to mitigate the adverse effect to historic properties, a draft Programmatic Agreement (PA) is proposed to be executed between the Commission and the Minnesota SHPO. The PA provides the following stipulations to mitigate the adverse effects to historic resources: complete Historic American Engineering Record Level II documentation of the Lake Byllesby Hydroelectric Facility Historic District; prior to commencing any work that would adversely affect the characteristics that qualify the powerhouse as a contributing resource to the Lake Byllesby Historic District, the exemptee must consult with the Minnesota SHPO; within five years following completion of the Undertaking, the exemptee must consult regarding appropriate public interpretation measures, including an interpretation plan. In addition, the Commission would require the exemptee to report any inadvertent discoveries.

On June 1, 2020, the Commission provided the draft PA to the Minnesota SHPO for review and comment. On July 29, 2020, the Minnesota SHPO said it did not have any comments on the draft PA. On August 12, 2020, the Commission provided the draft PA to the Advisory Council for review and comment. The Commission also asked the Advisory Council if it intends to participate in the proceeding pursuant to 36 C.F.R. Part 800.6.

6.9.3 Staff Recommendations

In accordance with section 106 of the NHPA, Dakota County has consulted with the Minnesota SHPO and Native American tribes to determine the effects on cultural resources due to the proposed amendment. The Lake Byllesby Historic District, which is eligible for listing on the National Register, is within the APE. Dakota County's proposal to amend its exemption would adversely affect cultural resources as it is anticipated that following the actions of the proposed amendment, the powerhouse will be a non-contributing resource in the historic district. Therefore, we recommend the PA developed between the Commission and the Minnesota SHPO, with the exemptee as a concurring party, should be incorporated in any amendment order for the Lake Byllesby project to mitigate the adverse effects to historic properties. We also recommend provisions for the exemptee to notify the Commission and the Minnesota SHPO if there are inadvertent discoveries of cultural resources during project construction.

6.10 Recreation

6.10.1 Affected Environment

The recreation sites and facilities in the project vicinity include the following: parks, trails, pedestrian bridge, a water trail, portage around the dam, and a golf course. Except for the camping area at Lake Byllesby Regional Park, all recreation sites and facilities are for day-use.

A boat launch (located less than 500 feet from the project powerhouse) provides access to Lake Byllesby immediately outside of the proposed action area. The exemptee maintains a boat restraint barrier above the project dam for public safety. Within the proposed action area downstream of the project dam there are no formal public recreation sites or facilities with access to the Cannon River. It is possible that the location near the Mills Towns State Trail pedestrian bridge is used for informal access to the Cannon River for recreation use such as shoreline fishing or for an unimproved canoe/kayak put-in location. The pedestrian bridge is located within the proposed action area and crosses over the Cannon River.

6.10.2 Environmental Effects

The use of the boat launch on Lake Byllesby immediately outside of the proposed action area will not be restricted or impacted by the project upgrade. The use of the pedestrian bridge in the proposed action area will also not be restricted or impacted. The view from the pedestrian bridge will be improved following enhancements to the powerhouse exterior and river restoration activities. The section of the Mill Towns State Trail on the land within the proposed action area near the utility area will remain open, however, there may be construction traffic that results in temporary restricted use of the trail for public safety. During periods of active construction, signs and safety cones will be placed to caution trail users to stay on the trail. The proposed action will not result in active construction on the trail; however, the trail will be crossed by construction equipment and materials from a staging area to the construction area.

6.10.3 Staff Conclusion

During consultation, no agencies expressed concern or requested studies with respect to recreation resources for this project upgrade. There are numerous existing recreational opportunities in the immediate project vicinity and only a small segment of the Mills Town State Trail would potentially be temporarily restricted. We conclude with the public safety precautions listed above that the proposed action would have no adverse effect on recreation.

6.11 Cumulative Impacts

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), a cumulative impact is "the impact on the environment that results from the incremental impact of the actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."¹² Based on our review of the exemptee's application, Commission staff have identified Cultural and Historic Resources as the only resource area that could be cumulatively affected by the proposed upgrade in combination with other past, present, and foreseeable future activities, such as: modifications to project facilities; project related ground-disturbing activities; wind and water erosion; recreational use; vandalism; and private or commercial development. The powerhouse is currently considered a contributing element to the historic district, but upon completing the proposed upgrade, it is expected that the powerhouse would be reclassified as a non-contributing resource. As discussed in Section 6.9, the exemptee has proposed a number of measures to replicate the appearance of the original powerhouse, document the historic district, and provide public interpretive resources. While the changes to the powerhouse cannot be restored to a contributing resource, the historic qualities had previously been compromised as a result of past renovations. Nevertheless, the proposed powerhouse construction would contribute to cumulative impacts to cultural and historic resources.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Comprehensive Development and Staff-Recommended Measures

Sections 4(e) and 10(a) of the Federal Power Act 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.¹³ Any amendment should be such, as in the Commission's judgment, 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 implementing the proposed upgrade at the project.

¹² 33 U.S.C. § 1341.

¹³ 16 U.S.C. § 811.

Commission staff recommends that the following measures be required to ensure the exemptee's proposal minimizes or mitigates for the potential effects described in this document: implementation of the Erosion Control Plan, Revegetation and Restoration Plan, and Dewatering Plan; compliance with the conditions of Nationwide Permit 17; avoidance of riverbed work between March 15 and June 15; adherence to the PA developed between the Commission and the Minnesota SHPO, with the exemptee as a concurring party; and provisions for the exemptee to notify the Commission and the Minnesota SHPO of any inadvertent discoveries of cultural resources during project construction.

Based on our independent review of the application and agency comments as well as our review of the potential effects of the proposed project and project alternatives, we selected the proposed action as the preferred action. We recommend this alternative because: (1) increasing the project capacity would allow the exemptee to more effectively operate its project as a dependable source of electrical energy; (2) the public benefits would exceed those of the action and no-action alternatives; and (3) the measures proposed by the exemptee would protect and enhance fish and wildlife resources, federally threatened species, and recreation opportunities, without reasonably foreseeable negative impacts to other resource areas.

8.0 FINDING OF NO SIGNIFICANT IMPACT

If the proposed application to upgrade the turbines at the Lake Byllesby Hydroelectric Project is approved, the project would continue to operate as it does today but with significantly increased generation. The exemptee does not propose any changes to reservoir level, run-of-river, or minimum flow requirements. The primary long-term changes would be the rerouting of some flows through the new turbines rather than over the spillway and changes to the powerhouse structure. The modified flows would only affect approximately 100 ft below the dam, and mitigation has been proposed for historic or cultural modifications. Other sources of potential impacts are associated with construction measures, primarily minor land-disturbing activities, for which the exemptee has provided multiple plans to prevent, minimize, and mitigate for any potential effects.

Based on our independent analysis, we find that the approval of the proposed turbine upgrade would not constitute a major federal action significantly affecting the quality of the human environment.

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