

159 FERC ¶ 62,198

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Loup River Public Power District

Project No. 1256-031

ORDER ISSUING NEW LICENSE

(Issued May 22, 2017)

INTRODUCTION

1. On April 16, 2012, Loup River Public Power District (Loup Power District) filed, pursuant to sections 4(e) and 15 of the Federal Power Act (FPA),<sup>1</sup> an application for a new license to continue operation and maintenance of the Loup River Hydroelectric Project No. 1256 (Loup Project or project). The project is located on the Loup and Platte Rivers in Nance and Platte Counties, Nebraska. The project does not occupy federal land. The project's authorized installed capacity is 50.937 megawatts (MW).
2. As discussed below, this order issues a new license for the Loup Project.

BACKGROUND

3. The Commission issued an original license for the Loup Project on April 17, 1934, with an expiration date of April 16, 1984.<sup>2</sup> A new license was issued on December 29, 1982, which expired on

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<sup>1</sup> 16 U.S.C. §§ 797(e) and 808 (2012).

<sup>2</sup> The Platte River is a navigable waterway of the United States. See Navigation Status Report: Platte River, October 1995, filed in Docket No. UL92-1-000 on November 6, 1996 and Docket No. UL97-4-000 on December 16, 1996. Therefore, section 23(b)(1) of the FPA, 16 U.S.C. § 817(1)(2012), requires the project to be licensed.

April 15, 2014.<sup>3</sup> Since then, Loup Power District has operated the project under an annual license pending the disposition of its new license application.

4. On August 23, 2012, the Commission issued a public notice in the Federal Register accepting the application for filing, indicating the application was ready for environmental analysis, and setting October 22, 2012, as the deadline for filing motions to intervene, protests, comments, recommendations, preliminary terms and conditions, and preliminary fishway prescriptions.<sup>4</sup> The U.S. Department of the Interior (Interior) filed a notice of intervention, comments, and recommendations on the application.<sup>5</sup> The Nebraska Public Power District (Nebraska Power District) timely filed a motion to intervene.<sup>6</sup> None of the intervenors oppose the project. Loup Power District filed reply comments on December 7, 2012, in response to Interior's comments and recommendations.

5. A draft Environmental Assessment (draft EA) was prepared by staff and issued on May 22, 2014, analyzing the effects of the proposed project and alternatives to it. Comments on the draft EA were filed by the U.S. Fish and Wildlife Service (FWS), City of Columbus, Nebraska Game and Parks Commission (Nebraska Game and Parks), Platte River Recovery Implementation Program (Platte Recovery Program), Nebraska Power District, Loup Power District, and American Bird Conservancy.

6. Staff issued a final EA on July 5, 2016.

7. The interventions, comments, and recommendations have been fully considered in determining whether, and under what conditions, to issue the license.

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<sup>3</sup> Loup River Public Power District, 21 FERC ¶ 62,535 (1982).

<sup>4</sup> 77 Fed. Reg. 52709 (August 30, 2012).

<sup>5</sup> Under Rule 214(a)(2) of the Commission's Rules of Practice and Procedure, Interior became a party to the proceeding upon the timely filing of its notice of intervention. 18 C.F.R. § 385.214(a)(2) (2016).

<sup>6</sup> 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) (2016).

## PROJECT DESCRIPTION

## A. Project Area

8. The Loup River basin originates in Sheridan County, in central Nebraska, and extends east about 260 miles to Platte County, Nebraska. The Loup River basin contains seven major river systems including the South Loup, Middle Loup, North Loup, Dismal, Calamus, Cedar, and Loup Rivers. The Loup River, which is formed by the confluence of the North and Middle Loup Rivers, originates in Howard County, Nebraska. From its origin, the Loup River flows about 68 miles to where it joins the Platte River<sup>7</sup> about 3 miles southeast of Columbus, Nebraska.

## B. Project Facilities

9. The Loup River Project consists of the following facilities (from upstream to downstream) (figure 1): (1) a 1,321-foot-long, 6-foot-high concrete diversion weir, located on the Loup River at river mile 34.2 and furnished with 2-foot-high wooden flashboards along a portion of its length; (2) a 35.2-mile-long power canal; (3) the north and south sand management areas, located adjacent to the power canal near the diversion weir; (4) the Monroe powerhouse, located on the power canal, and containing three generating units with a total authorized installed capacity of 7.464 MW; (5) a 6.9-kilovolt (kV) bus cable that extends about 300 feet underground from the Monroe powerhouse to an adjacent substation where the project interconnects with the grid via a step-up transformer; (6) a 227.56-foot-long sawtooth weir<sup>8</sup> that separates the power canal from Lake Babcock; (7) two storage reservoirs on the power canal (Lake Babcock and Lake North); (8) the Columbus powerhouse, located on the power canal and containing three generating units having a total authorized installed capacity of 43.473 MW; (9) three 13.8-kV bus cables that extend about 275 feet underground from the Columbus powerhouse generating units to an adjacent substation where the project interconnects with the grid via three step-up transformers; and (10) a 700-foot-wide outlet weir, located at the confluence of the power canal and the Platte River. The diversion of flow from the Loup River into the power canal creates a bypassed reach of 34.2 miles in the Loup River and 2 miles in the Platte River. A more detailed project description is contained in Ordering Paragraph (B)(2).

10. There are five project recreation facilities: (1) Headworks Park, which is located near the diversion weir and includes East Camp, Headworks Park, Park Camp, Trailhead Camp, Weir Park Camp,

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<sup>7</sup> The 103-mile portion of the Platte River from its confluence with the Loup River downstream to its confluence with the Missouri River is also referred to as the lower Platte River.

<sup>8</sup> Sawtooth refers to the zig-zag shape, as viewed from overhead, which provides additional flow length to minimize energy loss.

and Headworks Off-Highway Vehicle Park (Headworks OHV Park); (2) Lake Babcock Park, located on the north and west shores of Lake Babcock; (3) Lake North Park, located adjacent to Lake North; (4) Columbus Powerhouse Park, located adjacent to the Columbus powerhouse; (5) Tailrace Park, located at the confluence of the tailrace canal<sup>9</sup> and the Platte River; and (6) three trails (Two Lakes Trail, Bob Lake Trail, and Robert White Trail) with a cumulative length of 5.2 miles located along the north, west, and south perimeters of the Lake Babcock and Lake North Parks. Collectively, these facilities provide opportunities for water skiing, swimming, boating, camping, fishing, biking, hiking, picnicking, bird watching, photography, and off-highway vehicle riding.

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<sup>9</sup> The tailrace canal is that portion of the power canal between the Columbus powerhouse and the outlet weir.

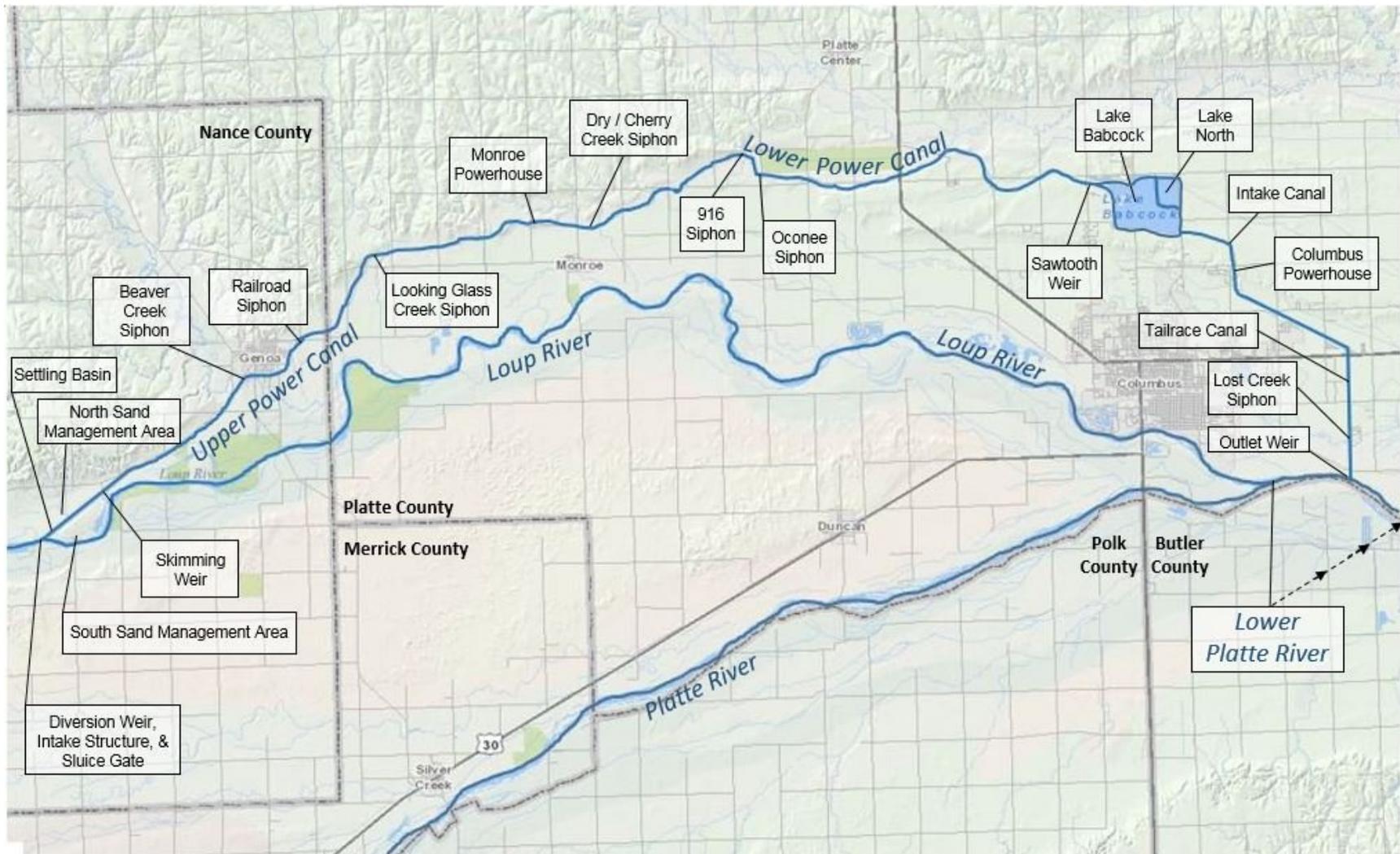


Figure 1. Map of the Loup Project (Source: Nebraska Department of Natural Resources, 2017; as modified by staff). The flow of the waterways depicted on the map is generally, left to right (west to east).

### C. Project Boundary

11. The project boundary encloses the diversion weir, sluice gate structure, intake structure, north and south sand management areas, power canal, Monroe and Columbus powerhouses, Lake Babcock, Lake North, outlet weir, and project recreation sites. Loup Power District proposes to remove from the project boundary three areas of land that it states are not necessary for project purposes, and add three areas of land that it states are necessary for project purposes. The project boundary is discussed further below.

### D. Current Project Operation

12. During normal operation, the intake and sluice gate structures are manually operated to divert up to 3,500 cubic feet per second (cfs) into the power canal from the Loup River. An on-site operator monitors both weather and river flow conditions for excessive flows and associated sediment deposition, and as necessary, reduces or curtails flow diversions to the power canal prior to, or during, a high-flow event.

13. The Monroe powerhouse, located on the power canal, operates in a run-of-canal mode whereby all inflow is immediately passed through and/or around the powerhouse. Water level sensors at the Monroe powerhouse intake are used to initiate adjustments to the turbine wicket gates to maintain a constant upstream water level. Control of the Monroe powerhouse generating units is normally dispatched remotely by the Columbus powerhouse operator. The generation of each unit is determined by water levels in the upper portion of the power canal and the wicket gate settings on the turbines. Each of the three turbines has a maximum hydraulic capacity of 1,000 cfs for a total powerhouse hydraulic capacity of 3,000 cfs. To pass flows in the upper power canal greater than the capacity of the available turbines, the Monroe powerhouse includes a radial bypass gate. This gate can be operated in a manual or automatic mode and is fitted with a floatation device that automatically opens the gate in response to high water levels in the upper power canal. If flows in the upper power canal exceed the capacity of the turbine generating units while the units are operating, the radial gate automatically opens to a pre-determined position to pass excess flow over a spillway and into the lower power canal downstream of the powerhouse.

14. The sawtooth weir maintains a minimum water level in the power canal upstream of Lake Babcock and Lake North while the Columbus powerhouse is operating. The sawtooth weir also prevents water from Lake Babcock from flowing back into the power canal should a breach of the power canal embankment occur.

15. Lake Babcock and Lake North, which are interconnected, store power canal inflow to allow the downstream Columbus powerhouse to operate as a peaking facility. When the Columbus powerhouse is operating, the stored water in Lake Babcock and Lake North is used to supply the powerhouse, which results in a drawdown of each lake of about 2 to 3 feet. In the off-peak hours, when there is less

demand for electricity, the flow through the powerhouse is reduced or discontinued and the lakes are allowed to refill for peaking operation the following day.

16. At the request of the Nebraska Power District dispatcher, the Columbus powerhouse typically generates for one period, or sometimes two periods, for several hours during the day. The amount and duration of power production varies each day according to both electrical demand and available water. The limited storage capacity within the lakes generally requires that the available inflow be stored and used for generation within the same 24-hour period. Except during brief ramp-up and ramp-down periods, operating discharges from the Columbus powerhouse range from a minimum flow rate of about 1,000 cfs, when one turbine is operating, to a high flow rate of about 4,800 cfs, when all three turbines are operating. Each of the three turbines in the powerhouse has a maximum hydraulic capacity of 2,060 cfs for a total powerhouse capacity of 6,180 cfs. However, flow through the Columbus powerhouse is limited by the capacity of the powerhouse's intake canal, which is 4,800 cfs.

17. Sediment deposited in the settling basin at the head of the power canal is removed periodically using a hydraulic dredge. The hydraulic dredge pumps the sediment as a slurry to either the north or south sand management area, depending upon the location of the dredge in the settling basin. Dredging begins in the spring after the winter ice cap on the settling basin melts in early March. Dredging is suspended from early June to mid-August to protect nesting Interior least terns (least tern) and piping plovers. In mid-August, dredging begins again at the downstream end of the settling basin and progresses upstream toward the intake gate structure. Typically, dredging is suspended in mid- to late-November when ice begins to form on the settling basin.

18. During cold-weather, after an ice cap has formed on the power canal, water diversions into the power canal are limited to 2,000 cfs to protect the bridge pilings from ice damage. Also, the intake and sluice gates to the power canal are de-iced to keep the headworks operable. Ice accumulation and debris can damage the diversion weir's flashboards, requiring at least partial replacement of the flashboards each spring.

19. Winter operation at the Monroe powerhouse includes monitoring water temperature and frazil ice<sup>10</sup> formation. If frazil ice is observed, the diversion of water into the power canal ceases, because frazil ice can plug the powerhouse trash racks and lead to overtopping of the power canal upstream of the powerhouse.

20. Winter operation of the Columbus powerhouse also includes monitoring water temperature and responding to the formation of frazil ice. If frazil ice is observed, the Columbus powerhouse operator

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<sup>10</sup> Frazil ice is a soft or amorphous collection of loose, randomly oriented needle-shaped ice crystals occurring in water that is too turbulent to freeze solid.

may reduce flow through the powerhouse or take the turbine generating units off-line to inhibit additional icing and potential plugging of the powerhouse's trash racks. Because the Columbus powerhouse has no bypass gate, when the powerhouse is taken off-line and the regulating reservoirs reach a specified elevation, flow diversion into the power canal ceases.

#### E. Proposed Environmental Measures

21. To protect and maintain the canal slopes and prevent erosion of the canal banks, Loup Power District proposes to continue monitoring the power canal for erosion and promptly address any noted problem areas using existing stream bank management procedures.

22. To prevent erosion of the Loup River's south bank immediately downstream of the diversion weir, Loup Power District proposes to continue placing the majority of sediments dredged from the settling basin into the north sand management area.<sup>11</sup>

23. To avoid or minimize construction-related erosion and sedimentation associated with the proposed improvements to the project's recreation facilities, Loup Power District proposes to use best management practices.

24. To protect fishery resources in the project's power canal, Loup Power District proposes to continue to conduct non-emergency maintenance procedures that require substantial curtailment of flows in the power canal and/or drawdowns of water in the power canal during periods with cooler weather conditions.

25. To protect aquatic resources,<sup>12</sup> Loup Power District proposes to maintain a minimum flow in the Loup River bypassed reach of 125 cfs, or inflow, whichever is less, from April 1 through September 30 and 50 cfs, or inflow, whichever is less, from October 1 through March 31. Loup Power District proposes that the minimum flows be measured as a three day rolling average based on the U.S. Geological Survey (USGS) gage (no. 06793000), located in the Loup River near Genoa, Nebraska, with no single daily average flow being less than 75 cfs from April 1 through September 30, or less than 35 cfs from October 1 through March 31.

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<sup>11</sup> The sediment slurry pumped to the south sand management area flows to the Loup River bypassed reach, which can lead to stream bank instability. The sediment slurry pumped to the north sand management area remains on that area.

<sup>12</sup> Loup Power District revised its minimum flow proposal from providing 75 cfs into the Loup River bypassed reach to its current proposal on November 5, 2015.

26. To avoid affecting least tern and piping plover nesting activities at the north sand management area, Loup Power District proposes to continue suspending dredging activities in the settling basin from late May through August.
27. To limit the spread of phragmites, Loup Power District proposes to continue monitoring and periodically treating project land and water during routine operation and maintenance.
28. To reduce the potential for “take”<sup>13</sup> of migratory birds, Loup Power District proposes to conduct migratory bird surveys of affected habitats and/or structures prior to carrying out any action that could result in a potential take of migratory birds.
29. To aid in the protection of the least tern and piping plover, Loup Power District proposes to continue coordinating with the Tern and Plover Conservation Partnership on the timing of the termination and resumption of the disposal of dredged materials to the north sand management area.
30. To protect recreationists from the effects of microcystin,<sup>14</sup> Loup Power District proposes to continue posting “health alert” notices for swimmers when Nebraska Department of Environmental Quality (Nebraska DEQ) water sampling detects microcystin in Lake North in excess of 20 parts per billion (ppb).
31. To maintain recreation opportunities at the project, Loup Power District proposes to continue operating and maintaining: (1) Headworks Park; (2) Lake Babcock Park; (3) Lake North Park; (4) Columbus Powerhouse Park; (5) Tailrace Park; and (6) three trails (Two Lakes Trail, Bob Lake Trail, and Robert White Trail).
32. To manage and enhance recreation, Loup Power District proposes to implement the Recreation Plan<sup>15</sup> that contains measures to: (1) install a volleyball court at Park Camp; (2) install a restroom facility at Headworks OHV Park; (3) construct a fishing pier at Lake North Park; (4) implement a no-wake zone in Lake North to enhance fishing opportunities at Lake North Park; (5) construct a walking/biking trail along the southeast shore of Lake Babcock; (6) upgrade camper electrical outlets at Lake North Park and

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<sup>13</sup> The Migratory Bird Treaty Act makes it unlawful to “take” a migratory bird or its nest or eggs, except as authorized by regulation. 16 U.S.C. § 703 (2012). Implementing regulations define “take” as “pursue, hunt, shoot, wound, kill, trap, capture or collect.” 50 C.F.R. § 10.12 (2016).

<sup>14</sup> Microcystin is a toxin generated from a single-celled blue-green alga, or cyanobacterium, which occurs naturally in surface waters.

<sup>15</sup> The Recreation Plan was filed as appendix E-5 of the license application.

Headworks Park;<sup>16</sup> (7) continue to prohibit vehicle access to Tailrace Park to minimize vandalism; and (8) continue to operate and maintain the Headworks OHV Park if an organization, such as the Nebraska Off Highway Vehicle Association (Nebraska OHVA), will assist in operating and maintaining the facility.

33. To protect cultural resources, Loup Power District proposes to implement a Historic Properties Management Plan (HPMP).

#### SUMMARY OF LICENSE REQUIREMENTS

34. As summarized below, this license, which authorizes continued operation of 50.937 MW of renewable energy capacity, requires the following measures, some of which are proposed by Loup Power District with staff modifications and additions.

35. To protect and maintain canal slopes and prevent the erosion of canal banks, the license requires a canal bank monitoring plan that specifies the method to be used for the proposed erosion monitoring in the power canal and identifies the measures that will be used to stabilize identified problem areas and control erosion in the power canal.

36. To limit erosion within the Loup River bypassed reach, the license requires Loup Power District to prepare a stream bank monitoring plan to: (1) monitor stream banks in the Loup River bypassed reach, adjacent to, and downstream of, the south sand management area to identify eroded areas; and (2) identify mitigation measures to stabilize identified eroded areas and control stream bank erosion.

37. To minimize soil erosion and sediment runoff, the license requires Loup Power District to prepare a soil erosion and sediment control plan that identifies measures that will be used during ground-disturbing activities associated with construction of the proposed recreation improvements.

38. To protect aquatic resources, water quality, and the endangered least tern and piping plover, the license requires Loup Power District to maintain a continuous minimum flow in the Loup River bypassed reach of 275 cfs or inflow,<sup>17</sup> whichever is less, from April 1 through September 30, and 100 cfs or inflow, whichever is less, from October 1 through March 31, as measured at a point upstream of its confluence with Beaver Creek.

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<sup>16</sup> Loup Power District completed these upgrades in 2011; therefore, this measure is not addressed in this license order.

<sup>17</sup> Inflow, as defined here, is the instantaneous flow at the point of measurement in the Loup River bypassed reach obtained when it has been at least 6 hours since the project last diverted flow into the power canal.

39. To enhance downstream habitat for the endangered least tern, piping plover, whooping crane, and threatened red knot, the license requires Loup Power District to limit the diversion of water into the power canal from March 1 through June 30 so as not to exceed an instantaneous rate of 2,000 cfs, as measured at a point in the power canal between the intake gate structure and the sawtooth weir.
40. To facilitate pallid sturgeon migration in the lower Platte River, the license requires Loup Power District to operate the project in an instantaneous run-of-canal mode from May 1 through June 7 by maintaining a constant water surface elevation in Lake North and Lake Babcock such that at any point in time, outflow from the lakes approximates the sum of inflow to the lakes.
41. To monitor project operation and verify compliance with the license's operational requirements, the license requires Loup Power District to prepare and implement an operation compliance monitoring plan.
42. To protect fishery resources in the project's power canal, the license requires Loup Power District to prepare a hot weather fish protection plan for the power canal to protect fish when non-emergency drawdowns are needed in the power canal during hot weather periods.
43. To minimize the spread of invasive species during project operation and maintenance, the license requires Loup Power District to implement an invasive species monitoring plan.
44. To ensure that FWS and Nebraska Game and Parks have the opportunity to provide comments and recommendations, the license requires Loup Power District to modify the proposed migratory bird surveys to include: (1) consulting with FWS and Nebraska Game and Parks; and (2) filing survey documentation, including agency comments on bird surveys, with the Commission.
45. To protect nesting habitat in the north sand management area and in the vicinity of the project for least terns and piping plovers, the license requires Loup Power District to prepare a least tern, piping plover, and red knot management plan to monitor any changes in the presence and habitat use of least terns, piping plovers, and red knots that may occur as a result of the flow-related license requirements, and to provide management protocols to protect least terns and piping plovers at the north sand management area.
46. To maintain recreation resources and eliminate facilities not used, the license requires Loup Power District to modify its proposed Recreation Plan to include: (1) provisions for operating and maintaining all project recreation facilities, including Headworks OHV Park; and (2) a provision for the removal of playground equipment from Tailrace Park because of the lack of use.
47. To protect cultural resources, the license requires Loup Power District to implement the programmatic agreement (PA), which modifies the proposed HPMP to include consultation with the Nebraska State Historic Preservation Office (Nebraska SHPO) if emergency procedures need to be implemented.

## WATER QUALITY CERTIFICATION

48. Under section 401(a)(1) of the Clean Water Act (CWA),<sup>18</sup> the Commission may not issue a license authorizing the construction or operation of a hydroelectric project unless the state water quality certifying agency either has issued water quality certification (certification) for the project or has waived certification by failing to act on a request for certification within a reasonable period of time, not to exceed 1 year. Section 401(d) of the CWA provides that the certification must become a condition of any federal license for the project.<sup>19</sup>

49. On October 18, 2012, Loup Power District applied to Nebraska DEQ for certification for the Loup Project, which Nebraska DEQ received on October 22, 2012. Nebraska DEQ issued certification for the Loup Project on January 2, 2013. The certification includes no conditions.

## COASTAL ZONE MANAGEMENT

50. Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA),<sup>20</sup> 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. The state of Nebraska does not have a coastal management program. Therefore, no consistency certification is required.

## SECTION 18 FISHWAY PRESCRIPTION

51. Section 18 of the FPA<sup>21</sup> provides that the Commission will require the construction, maintenance, and operation by a licensee of such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.

52. No fishway prescriptions or reservations of authority were filed under section 18 of the FPA.

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<sup>18</sup> 33 U.S.C. § 1341(a)(1) (2012).

<sup>19</sup> *Id.* § 1341(d) (2012).

<sup>20</sup> 16 U.S.C. § 1456(c)(3)(A) (2012).

<sup>21</sup> *Id.* § 811 (2012).

## THREATENED AND ENDANGERED SPECIES

53. Section 7(a)(2) of the Endangered Species Act of 1973 (ESA)<sup>22</sup> requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species, or result in the destruction or adverse modification of their designated critical habitat.

54. Seven federally listed species are known to occur in the vicinity of the project, the counties, or in project-affected reaches of the Loup River and the lower Platte River. These species are: the endangered pallid sturgeon (*Scaphirhynchus albus*), whooping crane (*Grus americana*), and least tern (*Sternula antillarum*), as well as the threatened piping plover (*Charadrius melodus*), red knot (*Calidra canutus rufa*), northern long-eared bat (*Myotis septentrionalis*), and western prairie fringed orchid (*Plantanthera praeclara*).

A. Northern Long-Eared Bat and Western Prairie Fringed Orchid

55. Staff determined in the final EA that the proposed action and alternatives would have no effect on the northern long-eared bat<sup>23</sup> and the western prairie fringed orchid<sup>24</sup> because each species requires specialized habitat that does not occur at the project. Therefore, no further action under the ESA is required for these two species.

B. Whooping Crane

56. Because the power canal diverts water from the Loup River into the power canal, continued operation of the project has the potential to affect whooping crane roosting habitat within the Loup River bypassed reach. There is no federally designated critical habitat for whooping cranes in the vicinity of the Loup Project.<sup>25</sup> Although the project is located within the easternmost band of the whooping crane migration corridor,<sup>26</sup> only about 2.5 percent of whooping crane sightings have been

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<sup>22</sup> Id. § 1536(a) (2012).

<sup>23</sup> See final EA at 235 and 236.

<sup>24</sup> See final EA at 178.

<sup>25</sup> See final EA at 150. Critical habitat for whooping cranes is located farther upstream of the Loup Project area, in the Big Bend reach of the Platte River between Lexington and Chapman, Nebraska. Id.

<sup>26</sup> See final EA at 154.

observed in that area.<sup>27</sup> Based on the anticipated low probability of whooping crane use of lands in the project boundary over the next 30 years, and habitat improvements from increased flows, staff concluded that continued operation may affect, but is not likely to adversely affect, the whooping crane or its habitat. On August 31, 2016, FWS concurred with this finding. Therefore, no further action under the ESA is required for the whooping crane. As discussed in the EA,<sup>28</sup> staff determined whooping crane habitat will improve as a result of the staff-recommended increased flows from March 1 through June 30 in the Loup River bypassed reach. Article 404 requires the implementation of the staff-recommended flows into the Loup River bypassed reach.

### C. Red Knot

57. The project is located on the western edge of the Mississippi River migratory corridor, which the red knot uses during its biannual migration. However, since 1998, there have been no reported sightings of the red knot at the project. As discussed in the EA,<sup>29</sup> staff determined that red knot foraging habitat will improve as a result of the staff-recommended increased flows in the Loup River bypassed reach from March 1 through June 30. Article 404 requires the staff-recommended flows in the Loup River bypassed reach.

58. Staff also determined that to gain a better understanding of the use of the Loup River bypassed reach by the red knot during its annual migrations, it would be beneficial to include the red knot in the management plan for the least terns and piping plovers.<sup>30</sup> Article 411 requires the Interior Least Tern, Piping Plover, and Rufa Red Knot Management Plan.

59. Therefore, with the aforementioned measures, staff determined that continued operation may affect, but is not likely to adversely affect the red knot or its habitat. On August 31, 2016, FWS concurred with this finding. Therefore, no further action under the ESA is required for the red knot.

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<sup>27</sup> See final EA at 180.

<sup>28</sup> See final EA at 182-190.

<sup>29</sup> See final EA at 236 and 237. The majority of the red knot population uses the Atlantic flyway during its northward migration. *Id.* at 177.

<sup>30</sup> See final EA at 236 and 237.

D. Least Tern, Piping Plover, and Pallid Sturgeon

60. Least tern, piping plover, and pallid sturgeon are present within the project area. There is no critical habitat in the project area for these species.<sup>31</sup> Staff determined that relicensing the project with staff-recommended protection measures would be likely to adversely affect the pallid sturgeon,<sup>32</sup> least tern,<sup>33</sup> and piping plover.<sup>34</sup> Therefore, by letter issued June 4, 2014, staff requested formal ESA consultation with FWS.

61. On December 16, 2016, FWS filed its Biological Opinion (BO) concluding that the project is not likely to jeopardize the continued existence of the pallid sturgeon, least tern, and piping plover. FWS's BO includes an incidental take statement with reasonable and prudent measures to minimize take of the three species along with terms and conditions to implement its proposed measures.<sup>35</sup> These reasonable and prudent measures and terms and conditions are included in Appendix A and are made part of this license by Ordering Paragraph (E).

62. In its incidental take statement, FWS states that the Commission must comply with the terms and conditions that are needed to implement the reasonable and prudent measures to avoid or minimize incidental take. This is incorrect. The Commission is not responsible for conducting studies or implementing any of the actions that may be necessary to maintain or operate a hydroelectric project under the terms of a Commission-issued license. Rather, the licensee, Loup Power District, is responsible for operating the project and implementing the terms and conditions of the incidental take

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<sup>31</sup> See final EA at 150.

<sup>32</sup> See final EA at 220-235, 290, and Table D.

<sup>33</sup> See final EA at 190-212.

<sup>34</sup> *Id.*

<sup>35</sup> The Endangered Species Act defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19) (2012). "Incidental take" means "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity." 50 C.F.R. §402.02 (2016).

statement. Therefore, the incidental take statement provisions have been modified in Appendix A to substitute the licensee for the Commission.<sup>36</sup>

63. The terms and conditions in the BO are consistent with staff-recommended measures analyzed in the final EA with the exception of the following.

E. Pallid Sturgeon

64. The BO requires the project to cease operating in a peaking mode once real-time water temperatures have met or exceeded 93° F (33.9° Celsius), as reported by the USGS gage (No. 06805500), located at Louisville, Nebraska. This measure was not analyzed in the final EA.

65. Under this requirement, there will be no diversion of water into the power canal and cessation of project peaking operation will continue until the daily maximum water temperature at the Louisville stream gage falls below 93° F for 72 consecutive hours following the initial 93° F reading. The BO's requirement does not affect Article 405, which requires the project to operate in a run-of-canal mode from May 1 through June 7 each year to facilitate pallid sturgeon migration within the lower Platte River.

66. Project peaking effects are detected as far downstream in the lower Platte River as Louisville, Nebraska. The BO's requirement to cease peaking operation when water temperatures reach 93° F at Louisville will eliminate the fluctuation of water elevations in the river caused by project operation during periods of high water temperatures, thereby providing more depth and volume of water in the streambed, increasing potential habitat for the pallid sturgeon, and reducing the potential for the water to become too warm, which makes pallid sturgeon more susceptible to fish kills. The annual project operating cost of this requirement is \$85,300.

67. The BO also requires that Loup Power District notify FWS's Nebraska Field Office of any reported fish kills that occur in the Platte River bypassed reach or in the lower Platte River. There will be negligible cost associated with this effort by Loup Power District, and the report of the fish kills will help to inform if project operation may be responsible for fish kills.

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<sup>36</sup> In several places in the incidental take statement, FWS states that the Commission will reinstate formal consultation if certain conditions occur. See conditions 1(d) and 1(e) of RPM 1 for the least tern and condition 1(d) and 1(e) of RPM 1 for the piping plover. Because it is the Commission rather than the licensee that would be responsible for reinstating formal consultation, this language is not revised. The Commission will reinstate formal consultation where appropriate, and as required by the ESA and implementing regulations.

68. The BO also requires that Loup Power District replicate the analysis described in Objective 1 of Appendix B of the license application.<sup>37</sup> The analysis is required to be conducted every 5 years throughout the entire term of the license, starting 5 years after issuance of the license, to identify annual and seasonal differences in flow and water surface elevation for: (1) the Platte River at North Bend, Nebraska; and (2) the Platte River at Louisville. The differences in data collected will be separated by wet, normal, and dry years, as described in Objective 1 of Appendix B of the license application. The data collected will help determine if any changes in water elevations caused by project peaking operation are greater or less than what occurred under the original study, and subsequently help identify the effects project peaking operation may have on pallid sturgeon. Replicating the data for pallid sturgeon described in Objective 1 will cost about \$2,500 every 5 years.

F. Least Tern and Piping Plover

69. In the final BO, FWS determined project peaking operation results in the take of least terns and piping plovers. As discussed above, the BO requires Loup Power District to replicate the analysis described in Objective 1 of Appendix B of the license application every 5 years, and report the findings in an annual report, as described below. The analysis will identify average annual and seasonal differences in flow and water surface elevation for the Platte River at North Bend and Louisville, as well as four additional locations.<sup>38</sup> The analysis may: (1) determine how the flow alterations, as required by Articles 404, 405, and 406, affect hydrological conditions within the lower Platte River; and (2) further establish the relationship between peaking and nest inundation for least terns and piping plovers within the lower Platte River. The developmental costs associated with the replication of the analysis are estimated to be \$2,500 every 5 years.

70. The BO also requires Loup Power District to implement a plan that monitors the amount and frequency of inundation of least tern and piping plover nests resulting from project peaking operation. The BO requires Loup Power District to submit an annual report documenting all studies and monitoring, which will include the analysis as described above. Monitoring will help identify the relationship between nest elevations used by nesting least terns and piping plovers and instances in which peaking

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<sup>37</sup> Objective 1 of the final license application is discussed in Study 2.0 Hydrocycling, section 5.2 pages 47 to 57. The objective of this study was to compare project peaking operation, flow rates, and stages in the lower Platte River with daily mean flow rates and stage to characterize the relative degree of variance between peaking operations under the current operation versus run-of-river operation.

<sup>38</sup> The additional locations include ungaged sites 2 miles upstream and downstream of the outlet weir on the Platte River, and gaged sites near Leshara and Ashland, Nebraska on the Platte River.

inundates nests or chicks. The developmental costs associated with monitoring least tern and piping plover inundation and the preparation of the annual report are estimated to be \$1,000 annually.

71. Project peaking operation has the greatest effect on least terns and piping plovers immediately downstream of the outlet weir, which attenuates as water moves downstream. In the absence of nest fate<sup>39</sup> data immediately downstream of the outlet weir, FWS used estimates based on nest fate data that originated predominantly outside the area of greatest peaking effect to predict the amount of take expected to occur to least terns and piping plovers for the project. In conjunction with least terns and piping plover monitoring, the peaking analysis will produce empirical data that will comprehensively establish the degree to which project peaking operation affects least tern and piping plovers in the lower Platte River.

72. Condition 1(c) of RPM 1 for the piping plover states that Loup Power District must secure approval from FWS prior to modification of the flows prescribed under Articles 404, 405, and 406 of the license under all circumstances, including modifications during emergencies. However, compliance with this condition may not be possible in some cases, particularly if an emergency would affect the safety of the project or otherwise pose a risk to life, health, or property.<sup>40</sup> In these cases, the Commission would respond to the emergency without regard to whether Loup Power District had first obtained the consent of FWS, and would take into account the emergency circumstances in determining the reasonableness of Loup Power District's course of action. Nevertheless, because the measure is a condition of the incidental take statement, it is included as a condition of this license.

#### G. Conservation Measures

73. In addition to the incidental take terms and conditions, FWS recommends<sup>41</sup> four conservation measures. First, FWS recommends that Loup Power District coordinate with FWS and Nebraska Game and Parks to ensure the nesting areas at the north sand management area include: (1) habitat

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<sup>39</sup> Nest fate indicates either success (the nest has produced at least one viable, fledged young) or failure of the nest (the nest has produced no viable, fledged young).

<sup>40</sup> See generally Part 12 of the Commission's regulations, 18 C.F.R. Part 12 (2016).

<sup>41</sup> Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. See 50 C.F.R. § 402.02 (2016).

approximating the amount and quality used by the least tern from 2008-2014; (2) a source of easily accessible fresh water near areas set aside or used for nesting; and (3) woody debris or other nest materials capable of providing shade and refuge for least tern chicks. Second, FWS recommends that Loup Power District establish a partnership with the off-highway vehicle associations to educate and raise awareness about the effects that off-road vehicles can have on nesting least terns and piping plovers within the Loup River bypassed area. Third, FWS recommends that Loup Power District participate in water management planning efforts for the Platte River Recovery Implementation Program (Platte Recovery Program)<sup>42</sup> and the lower Platte River to raise awareness of water protection needs for federally listed species and the fish and wildlife resources in the Loup and Platte Rivers. Fourth, FWS recommends that Loup Power District measure cross-sections in the Loup River bypassed reach to determine if implementation of staff's recommended flows increase the quantity and quality of roosting habitat for the whooping crane. The conservation measures are discussed below.

74. Regarding FWS's first recommendation concerning nesting habitat at the north sand management area, as staff recommended in the final EA,<sup>43</sup> Article 411 requires Loup Power District to develop an Interior Least Tern, Piping Plover, and Rufa Red Knot Management Plan for the project. The plan must include, among other things, provisions for the protection, mitigation, and enhancement of least terns, piping plovers, and red knots utilizing the north sand management area. The plan must be developed in consultation with FWS and Nebraska Game and Parks and will consider these agencies' recommendations.

75. Regarding FWS's second recommendation to require the licensee to partner with off-highway vehicle associations to raise awareness of nesting areas, the only association that was known to use the Loup Project for recreation was the Nebraska OHVA, which disbanded on September 29, 2016. Therefore, this recommendation is unnecessary and is not included in this license.

76. Regarding FWS's third recommendation, coordination between FWS and Loup Power District for the Platte Recovery Program, this measure lacks specificity and there is no assurance that such coordination would address a project effect. Therefore, the license does not require this measure.

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<sup>42</sup> The Platte Recovery Program is a basin-wide effort undertaken by Interior and the states of Colorado, Nebraska, and Wyoming to provide benefits for the least tern, whooping crane, pallid sturgeon, and piping plover.

<sup>43</sup> See final EA at 212.

77. Concerning FWS's fourth recommendation, in the final EA,<sup>44</sup> staff concluded that limiting diversion and providing minimum flow releases for least terns and piping plovers will generally improve whooping crane roosting habitat in the bypassed reach by increasing channel wetted widths. Requiring the licensee to conduct studies to measure the change in the quantity and quality of roosting habitat that results from these minimum flows would not serve any project-related purpose. Therefore, the license does not include this recommendation.

#### NATIONAL HISTORIC PRESERVATION ACT

78. Under section 106 of the National Historic Preservation Act (NHPA)<sup>45</sup> and its implementing regulations,<sup>46</sup> federal agencies must take into account the effect of any proposed undertaking on properties listed or eligible for listing in the National Register of Historic Places (National Register) and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. This generally requires the Commission to consult with the State Historic Preservation Officer to determine whether and how a proposed action may affect historic properties, and to seek ways to avoid or minimize any adverse effects.

79. As discussed in the final EA,<sup>47</sup> parts of the Loup Project are individually eligible for listing in the National Register and are also contributing elements to the listed Loup Historic District. There are also six archaeological sites within the area of potential effects that are listed or eligible for listing on the National Register. These properties could be adversely affected if not managed properly. To satisfy its responsibilities under section 106, the Commission executed a PA with the Nebraska SHPO on June 16, 2014, and invited Loup Power District, the Nebraska SHPO, the Omaha Tribe of Nebraska, the Pawnee Nation of Oklahoma, and the Santee Sioux Nation to concur with the stipulations of the PA.<sup>48</sup> Loup Power District concurred. The PA requires Loup Power District to implement an HPMP, filed with the license application, for the term of the license. Execution of the PA demonstrates the Commission's compliance with section 106 of the NHPA. Article 414 requires Loup Power District to implement the PA and HPMP.

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<sup>44</sup> See final EA at 189.

<sup>45</sup> 54 U.S.C. § 306108. Pub. L. 113-287, 128 Stat. 3188 (2014).

<sup>46</sup> 36 C.F.R. Part 800 (2016).

<sup>47</sup> See final EA at 255 and 256.

<sup>48</sup> The executed PA was filed on August 26, 2014.

## LAND AND WATER CONSERVATION FUND ACT

80. Section 6(f)(3) of the Land and Water Conservation Fund Act<sup>49</sup> (Conservation Act) prohibits properties acquired or developed with assistance from the Land and Water Conservation Fund (Conservation Fund) from conversion to other than public outdoor recreation use without the approval of the Secretary of the Interior. The authority for approval of conversions has been delegated to the National Park Service (Park Service).

81. The Park Service, in a letter filed October 19, 2012, states that the following recreation sites were developed with Conservation Fund assistance: (1) a picnic shelter at Lake North Park; (2) a picnic shelter at Lake Babcock Park; and (3) the City of Columbus' Pawnee Park.<sup>50</sup> The project as licensed will not result in a conversion of use for the two picnic shelters or for Pawnee Park, which is located about 6 miles south of the project. Therefore, further consultation with the Park Service under the Conservation Act is not required.

## RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES PURSUANT TO SECTION 10(j) OF THE FPA

82. Section 10(j)(1) of the FPA<sup>51</sup> requires the Commission, when issuing a license, to include conditions based on recommendations submitted by federal and state fish and wildlife agencies pursuant to the Fish and Wildlife Coordination Act,<sup>52</sup> to "adequately and equitably protect, mitigate damages to, and enhance fish and wildlife (including related spawning grounds and habitat)" affected by the project.

83. If the Commission believes that a recommendation may be inconsistent with the purposes and requirements of Part I of the FPA or other applicable law, section 10(j)(2) requires the Commission and the agencies to attempt to resolve the inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies.<sup>53</sup> If the Commission still does not adopt a recommendation, it must explain how the recommendation is inconsistent with Part I of the FPA or

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<sup>49</sup> Public Law 88-578; 16 U.S.C. §§ 460I-4 through 460I-11 (2006).

<sup>50</sup> Pawnee Park is owned and operated by the City of Columbus, Nebraska.

<sup>51</sup> 16 U.S.C. § 803(j)(1) (2012).

<sup>52</sup> 16 U.S.C. § 661 et seq. (2012).

<sup>53</sup> 16 U.S.C. § 803(j)(2) (2012).

other applicable law and how the conditions imposed by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife resources.

84. In response to the August 23, 2012, public notice that the project was ready for environmental analysis, Interior filed eight recommendations under section 10(j).<sup>54</sup> One recommendation is outside the scope of section 10(j) and is discussed in the next section. Of the seven recommendations that are within the scope of section 10(j), this license includes conditions consistent with two recommendations: (1) filing a least tern and piping plover management plan (Article 411); and (2) implementing the migratory bird and bald eagle protection measures described in sections E.6.4.2 and E.6.4.3 of the license application (Article 410).

85. In the draft EA,<sup>55</sup> staff made an initial determination that the remaining five of Interior's recommendations that are within the scope of section 10(j) may be inconsistent with either the substantial evidence standard of section 313(b) of the FPA or the comprehensive planning standard of section 10(a)(1) and with the public interest standard of section 4(e) of the FPA. These five recommendations include: (1) maintaining a continuous minimum flow of 350 cfs from April 1 through September 30 in the Loup River passing the project diversion; (2) maintaining a continuous flow of 175 cfs from October 1 through March 31 in the Loup River passing the project diversion; (3) limiting the diversion of water from the Loup River into the power canal to no more than an instantaneous flow of 2,000 cfs from March 1 through August 31; (4) mechanically modifying four sandbars/point bars within the Loup River bypassed reach; and (5) operating the project to maintain a minimum flow in the lower Platte River of 1,000 cfs from March 1 to August 31.

86. By letter issued June 4, 2014, staff advised Interior of its preliminary determination and attempted to resolve the apparent inconsistencies. In response, FWS, on behalf of Interior, filed a letter with the Commission on June 17, 2014, stating that it accepts staff's alternatives to Interior's five section 10(j) recommendations, as described in the draft EA.

87. Out of those five staff recommendations that Interior accepted, staff subsequently included three as staff flow recommendations in the final EA. The three recommended measures are required by Articles 404 and 406. However, in the final EA, staff altered its recommendations for modifying sandbars/point bars and providing minimum flows in the lower Platte River.

88. In the final EA, staff revised its sandbars/point bars recommendation. Staff recommended that Loup Power District conduct surveys of sandbar formations for 6 years, as part of a larger management

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<sup>54</sup> Interior filed the recommendations on October 19, 2012.

<sup>55</sup> See draft EA at 286, 287, and table 69.

plan for least terns, piping plovers, and red knots (Article 411). The results of the surveys will be used to determine how staff's recommended operational measures affect habitat use by least terns and piping plovers, and if additional mitigation, such as reshaping sandbars/point bars and removing herbaceous vegetation, are needed. Staff's recommendation provides for sandbar modification, if needed; therefore, staff considers the related inconsistencies regarding Interior's 10(j) recommendation to be resolved.

89. Also in the final EA, staff recommended that Loup Power District operate the project in a run-of-canal mode with no peaking operation from May 1 through June 7 to ensure that there would be flows to enable pallid sturgeon migration in the lower Platte River. Staff's recommendation will also facilitate pallid sturgeon migration within the lower Platte River. Therefore, there is no inconsistency with the revised run-of-canal flow, as required by Article 405.

90. In its comments on the final EA, Loup Power District opposes the staff recommended minimum flows and other operational measures. Loup Power District argues that downstream water rights holders will divert the Loup River and Platte River bypassed reach flows not used by it for project generation, thereby preventing the intended fish and wildlife benefits of the minimum flow measures.<sup>56</sup> Loup Power District further maintains that increased flows in the Loup and Platte Rivers would not enhance aquatic and wildlife habitats while resulting in a "significant" and "unnecessary" loss of power production and revenues; the staff-recommended operational measures do not consider all of the biological data available in the project's record; and the staff-recommend operational measures are

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<sup>56</sup> Specifically, Loup Power District argues that the minimum flows required by Article 404 and the seasonal 2,000 cfs maximum diversion required by Article 406 could adversely affect its water rights. Loup Power District states that, as a senior appropriator, it can place a "call" on the river and if flows are insufficient to meet its appropriation, the Nebraska DNR would direct junior appropriators to stop diverting water until Loup Power District's appropriation is met. The District adds that, if the junior appropriators use their appropriation for irrigation, they can choose to not use their appropriated water or use their appropriated water and compensate Loup Power District for lost generation. Loup Power District further states that Nebraska DNR ensures that water provided to the senior appropriator is beneficially used and will not prevent a junior appropriator from diverting water if the water would go unused by a senior appropriator who has made a call on the river. Loup Power District therefore contends that using part of its 3,500 cfs appropriated water for minimum flows in the river instead of for power generation would prevent Nebraska DNR from administering Loup Power District's call on the river because the water would not be used for its stated beneficial use. Loup Power District also maintains that an upstream irrigator would be able to apply for a water right for part or all of the water used to provide the minimum flows.

inferior to those that Loup Power District proposed in terms of balancing environmental protection and developmental cost. Staff address these matters below.

91. With regard to water rights, section 21 of the FPA specifically reserves these matters to the states. Therefore, the Commission has no authority to adjudicate them. Nevertheless, staff notes that other licensed projects in Nebraska are subject to instream flow requirements and are able to comply with them.<sup>57</sup> Moreover, because minimum flows and diversion limits are required by this license, not only as license articles but also as conditions of the biological opinion that FWS issued for the Loup Project, this water is being used for project purposes and is necessary for the project's operation as a matter of federal law, to satisfy FPA and ESA requirements. Finally, standard article 5 of this license requires the licensee to acquire and maintain all of the property rights necessary to operate and maintain the project. This includes any water rights necessary to comply with the license conditions.

92. In its comments on the draft EA, Loup Power District recommended eliminating draft license Article 406, Maximum Diversion of Flow into the Loup Power Canal. Additionally, in its comments on the final EA, Loup Power District states that the final EA analysis is "arbitrary and capricious." Loup Power District bases its determinations on several conclusions, including: (1) the additional flows would not create or improve habitat for least terns and piping plovers; and (2) its relicensing studies of 1.0 Sedimentation and 5.0 Flow Depletion and Flow Diversion show that project operation has little effect on least terns and piping plovers.

93. In the final EA,<sup>58</sup> staff concluded that the diversion of flow and sediment into the project and the subsequent removal and disposal of sediment had the potential to adversely affect nesting habitat for the least tern and piping plover due to: (1) channel narrowing in the Loup River bypassed reach due to reduced flows; (2) changes to habitat<sup>59</sup> identified downstream of the project diversion weir in the Loup River bypassed reach and lower Platte River; and (3) creation of a sediment deficit in the Loup

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<sup>57</sup> See, e.g., Central Nebraska Public Power District and Nebraska Public Power District, Order Approving Offer of Settlement and Issuance of New Licenses (Project Nos. 1417 and 1835), 84 FERC ¶ 61,077 (1998) (requiring the Districts to contribute instream flows and habitat for endangered and threatened species in the Platte River Basin). See also Nebraska Public Power District, Order Issuing New License (Project No. 1835), 84 FERC ¶ 61,078 (1998); Central Nebraska Public Power District, Order Issuing New License (Project No. 1417), 84 FERC ¶ 61,079 (1998).

<sup>58</sup> See final EA at 199.

<sup>59</sup> Changes to habitat as a result of the diversion of flows into the power canal include differences in channel width, sandbar size, vegetation cover, and sandbar location.

River bypassed reach and lower Platte River at the outlet weir that has altered the stream characteristics, including stream width. Limiting the diversion of flows into the power canal and providing minimum flows to the bypassed reach, as required by Article 404 and Article 406, will increase dominant discharge,<sup>60</sup> width, depth, velocity, flow area, and sediment transport during the nesting season. Increased flows to the Loup River bypassed reach will help restrict vegetation growth, provide increased forage, increase the magnitude of spring and summer flows, and improve the sediment deficit in the lower Platte River at the tailrace return; however, it is unclear to what extent least tern and piping plover populations will benefit from these additional flows.

94. Loup Power District states that the biological data available in the record does not support staff's analysis. Loup Power District attempts to draw parallels between the experiments conducted by the Platte Recovery Program in the central Platte River, and the flows recommended as part of the staff alternative in the final EA. Loup Power District states that staff ignored information that shows that the flow and management strategies used by the Platte Recovery Program, and which are "identical" to the staff alternative, do not create and maintain in-channel nesting habitat for least terns and piping plovers. As stated in Appendix B of the final EA,<sup>61</sup> staff concluded the methodologies and environments the Platte Recovery Program used in their experiments were a strong departure from the flows required by Article 404 and Article 406 and the environmental conditions found in the Loup River bypassed reach and lower Platte River. The Platte Recovery Program experiments used short-duration, sediment-deficient, high-flow events from Lake McConaughy to simulate the kinds of seasonal flooding events that have the potential to build sandbars and subsequently produce new tern and plover sandbar habitat. The Loup Project does not have a body of water with a size sufficient to replicate these flows, nor are the flows entering the Loup River bypassed reach as sediment deficient; therefore, comparing the experiments conducted by the Platte Recovery Program and the flows required by Article 404 and Article 406 is not reasonable.

95. In its comments on the draft EA, Loup Power District edited draft license Article 404 to change the minimum flows in Loup River bypassed reach from 275 cfs to 125 cfs for the period of April 1 through September 30, and from 100 cfs to 50 cfs for the period of October 1 through March 31. Loup Power District also changed the flow measurement basis from an instantaneous value to a 3-day rolling average value. Loup Power District did not provide a basis or justification for its change. As staff concluded in the final EA, its higher recommended seasonal minimum flows are needed to meaningfully

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<sup>60</sup> The dominant discharge is the constant flow rate that is required to transport the sediment load necessary to maintain the characteristics of a stream channel, and is equal to the sediment load transported by the actual streamflow for an equivalent time period.

<sup>61</sup> See final EA at B-28 and B-29.

improve the quality and quantity of aquatic habitat in the Loup River bypassed reach.<sup>62</sup> Therefore, this license includes staff's recommended minimum seasonal flows in Article 404.

96. Loup Power District states that in making the flow recommendations for the Loup and Platte Rivers, staff and FWS did not consider the depletion<sup>63</sup> effects of the recommended measures. This is not correct. As stated in the final EA, relicensing the project with the staff alternative will result in a depletion of water in the lower Platte River between 1.9 to 3.1 cfs, which staff noted is greater than the 0.1 acre-foot per year (0.0001 cfs) that FWS determined would be de minimis.<sup>64</sup> Staff therefore consulted with FWS as required by section 7 of the ESA. Staff analyzed the consumptive effects of FWS's flow recommendations for normal, wet, and dry years and summarized them in the final EA. To provide context for these flows, staff determined that the increase in consumptive loss of 3.1 cfs that would occur during dry years is 0.07 percent of the long term average flow rate in the lower Platte River, as measured at North Bend. Staff concluded that this amount is not substantial or even measurable in a riverine environment<sup>65</sup> and, therefore, would have inconsequential effects on fish and wildlife resources in the lower Platte River.

97. Finally, in its comments on the final EA, Loup Power District takes issue with staff's interpretation or use of specific data in the project record to support staff's operational recommendations. These data include: (1) bypassed reach water temperature data; and (2) Platte River sediment data filed on November 23, 2011, December 7, 2012, and June 2, 2015. Staff already addressed the Platte River sediment data in the final EA and therefore, does not repeat it here.<sup>66</sup> The bypassed reach water temperature data is discussed below.

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<sup>62</sup> See final EA at 280-282.

<sup>63</sup> Depletion includes evaporation from the areas of open water, evapotranspiration from riparian vegetation, and water withdrawals. In this instance, evapotranspiration is the sum of evaporation and plant transpiration, in which transpiration accounts for the movement of water within a plant and the subsequent loss of water as vapor through its leaves.

<sup>64</sup> See final EA at 91 and 92.

<sup>65</sup> See final EA at 91 and 93.

<sup>66</sup> See final EA at B-13 and B-14.

98. Loup Power District states that the staff use and interpretation of temperature data used in the final EA was flawed because it uses methodologies developed by Sinokrot and Gulliver (2000)<sup>67</sup> that were used for another project on the upper Platte River. This is incorrect. Staff's reference to the Sinokrot and Gulliver (2000) publication was the use of a general conclusion made in that publication that found that high water temperatures in streams can be reduced with an increased stream flow. This is a general concept that illustrates that there is a correlation between river discharge and water temperatures, with water temperatures increasing when water discharges are decreased, and has been proven in many other publications.<sup>68</sup>

#### SECTION 10(a)(1) OF THE FPA

99. Section 10(a)(1) of the FPA<sup>69</sup> requires that any project for which the Commission issues a license 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.

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<sup>67</sup> Sinokrot, B.A. and G.S. Gulliver. 2000. In-stream flow impact on river water temperatures. *J. Hydraulic Research* 38(5):339-350.

<sup>68</sup> Staff's literature review found the following publications pertaining to reduced streamflows and effects on water temperatures in streams, listed in no particular order: (1) B.A. Sinokrot and J.S. Gulliver. 2000. Instream flow impact on river water temperatures. *J. Hydraulic Research* 38(5):339-349; (2) B. Sinokrot, R. Gu, and J.S. Gulliver. 1996. Impacts of in-stream flow requirements upon water temperature in the Central Platte River. Project Report 381. University of Minnesota, St. Anthony Falls Laboratory, Minneapolis, Minnesota, May 1996, 89 pages; (3) J. B. Hockey, I.F. Owens, and N.J. Tapper. 1982. Empirical and theoretical models to isolate the effect of discharge on summer water temperatures in the Hurunui River. *New Zealand Hydrological Society*. Vol 21(1): 1-12; (4) M.J. Bradford and J.S. Heinonen. 2008. Low flows, instream flow needs and fish ecology in small streams. *Canadian Water Resources Journal*, Vol. 33(2):165-180; (5) L.R. Elmore, S.E. Null and N.R. Mouzon. 2015. Effects of environmental water transfers on stream temperatures. *River Research Applications* (on-line at [www.wileyonlinelibrary.com](http://www.wileyonlinelibrary.com)); (6) L.A. Sprague. 2005. Drought effects on water quality in the South Platte River Basin, Colorado. *J. American Water Resources*. 41(1):11-24; and (7) B.S. Caruso. 2001. Regional river flow, water quality, aquatic ecological impacts and recovery from drought. *Hydrological Sciences Journal*. 46(5), 677-699.

<sup>69</sup> 16 U.S.C. § 803(a)(1) (2012).

A. FWS Recommendation

100. FWS recommended, under section 10(j), that Loup Power District report any operational deviations to the Commission within 30 days of occurrence. Staff determined the measure was outside the scope of section 10(j) because it was not a specific measure to protect, mitigate damages to, or enhance fish and wildlife. Consequently, staff did not consider this recommendation under section 10(j) of the FPA. Instead, staff considers this recommendation under the broad public-interest standard of section 10(a)(1).<sup>70</sup>

101. A requirement for Loup Power District to report deviations from the operational requirements of the license would assist the Commission in administering the license terms. Therefore, Article 407 requires Loup Power District to prepare an operation compliance monitoring plan that describes how the licensee will comply with the operational requirements of this license.

B. Loup Power Canal Bank Monitoring

102. Portions of the banks of the power canal are prone to erosion. Loup Power District proposes to monitor the power canal for potential erosion and promptly address any noted problem areas to maintain the stability of the power canal's banks, which would limit the amount of sediment entering the water and protect water quality and aquatic habitat in the project area. In the final EA,<sup>71</sup> staff concluded that Loup Power District's proposal lacks detail and specificity and recommended that a monitoring plan be developed to include the monitoring methods, the monitoring frequency, the criteria used to assess whether the canal bank requires stabilization, and the potential measures that would be used to mitigate areas of canal stream bank determined to be unstable. Article 401 requires Loup Power District to develop a bank monitoring plan for the power canal.

C. Loup River Bypassed Reach Stream Bank Monitoring

103. Loup Power District proposes to continue discharging the majority of sediment dredged from the settling basin into the north sand management area to deter migration of the Loup River bypassed reach's south bank immediately downstream of the diversion weir. The recent distribution of dredged material has generally maintained the size and location of the channel of the Loup River bypassed reach. However, implementing Article 404, Minimum Flows in the Loup River Bypassed Reach and Article 406, Maximum Diversion of Flow into the Loup Power Canal will alter the flow in the Loup River bypassed reach and could lead to instability of the stream banks near the south sand management area. Loup

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<sup>70</sup> Id.

<sup>71</sup> See final EA at 38.

Power District has no formalized program to monitor the stream bank stability of the Loup River bypassed reach in the vicinity of the south sand management area. In the final EA,<sup>72</sup> staff concluded that monitoring the Loup River bypassed reach adjacent to and downstream of the south sand management area, for potential erosion and promptly addressing any problem areas would maintain the stability of the Loup River's stream banks, limit the amount of sediment entering the water, and protect water quality and aquatic habitat. Article 402 requires Loup Power District to develop a stream bank monitoring plan for the bypassed reach.

104. In comments on the final EA,<sup>73</sup> Loup Power District states that draft license Article 402 in the final EA includes two requirements that imply that it is possible to distinguish stream bank erosion resulting from project operation from stream bank erosion resulting from other processes. Loup Power District recommends that items (3)<sup>74</sup> and (5)<sup>75</sup> be deleted from draft license Article 402.

105. Items (3) and (5) are essential to the implementation of the Loup River bypassed reach stream bank monitoring plan. They establish the methods that would be used to monitor stream bank stability and the criteria that would be used to determine whether the stream bank requires stabilization. However, reference to project operation is not necessary for items (3) and (5), and therefore, it is not included in Article 402.

106. On a related matter, in its comments on the final EA, Loup Power District disagrees with staff's assessment that the need for bank protection structures, such as the project's jetties, and the need for ongoing maintenance is an indication that project operation has a localized effect on stream bank stability. Loup Power District asserts that construction and maintenance of the jetties<sup>76</sup> in the Loup

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<sup>72</sup> See final EA at 39.

<sup>73</sup> Loup Power District filed comments on the final EA on September 22, 2016.

<sup>74</sup> Item (3) is a description of the methods that will be used to monitor bank stability to determine the extent and magnitude of stream bank erosion occurring during project operation.

<sup>75</sup> Item (5) is the criteria that will be used to assess whether the stream bank requires stabilization or project operation requires modification.

<sup>76</sup> As a result of the expressed concern about southward channel migration and the associated concern that discharge to the contiguous south sand management area may be a contributing factor to channel migration, Loup Power District began discharging dredged material to the north sand management area in 1961. In addition, Loup Power District also maintains a series of jetties in the Loup River bypass reach to prevent further channel migration.

River bypassed reach is necessary because of damage caused by ice conditions and debris rather than project operation.

107. Although ice and debris cause some of the instability, project operation also contributes to the stream bank instability in the Loup River bypassed reach.<sup>77</sup> Project operation diverts approximately 69 percent of the flow and 1.44 million tons<sup>78</sup> of sediment annually from the Loup River bypassed reach. The continuing effects of this diversion of water and sediment from the Loup River bypassed reach are the maintenance of a reduced effective and dominant discharge, flow width, and sediment transport capacity, resulting in decreases in stream bank stability and the ability of the reach to convey flood flows.<sup>79</sup> Therefore, the need for Article 402 is directly related to the effects of project operation.

#### D. Construction-Related Soil Erosion and Sediment Control

108. Construction of the recreation improvements required by Article 413, including a restroom, volleyball court, fishing pier, and new trail segment, will involve land-disturbing activities that could potentially cause localized soil erosion. To minimize soil erosion and sediment runoff during construction of these recreation improvements, Loup Power District proposes to use best management practices, which would protect water quality, terrestrial resources, and aquatic habitat from construction-related activities through avoidance and minimization of soil erosion and sediment runoff. In the final EA,<sup>80</sup> staff concluded that Loup Power District's proposal lacks detail and specificity regarding how the best management practices would address soil erosion from these land-disturbing activities and recommended development of a detailed soil erosion and sediment control plan. Article 403 requires Loup Power District to develop a soil erosion and sediment control plan for the recreation improvements.

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<sup>77</sup> See final EA at 36-39.

<sup>78</sup> Approximately 0.56 million tons of the sediment removed from the settling basin returns to the Loup River bypassed reach by way of the south sand management area.

<sup>79</sup> See final EA at 105, 106, and 113-115.

<sup>80</sup> See final EA at 39 and 40.

E. Operation Compliance Monitoring

109. In the final EA,<sup>81</sup> staff recommended a license condition requiring Loup Power District to develop an operation compliance monitoring plan to assist the Commission in administering the operational requirements of the license. Article 407 requires Loup Power District to develop an operation compliance monitoring plan.

F. Hot Weather Fish Protection

110. Drawdown of water in the power canal during times when water temperature in the canal is at or above 90° F has the potential to cause fish kills in the power canal. Loup Power District proposes to avoid conducting non-emergency maintenance activities that require drawdown of water in the power canal during hot weather conditions to protect fishery resources. In the final EA,<sup>82</sup> staff determined that Loup Power District's proposal would reduce potential fish mortality. Article 408 requires this measure.

G. Vegetation Management

111. Article 413 requires the construction of a restroom, volleyball court, fishing pier, and a new trail segment. In the EA,<sup>83</sup> staff recommended that Loup Power District develop a vegetation management plan to revegetate areas disturbed by construction of these recreation improvements. However, construction of these improvements will occur on land already disturbed or will result in limited loss of permanent vegetation. Therefore, there is no need for a vegetation management plan and this license does not require one.

H. Invasive Species Monitoring

112. Invasive plants, such as phragmites, reed canary grass, and purple loosestrife, are known to occur within the project boundary. These invasive plants can continue to spread, outcompeting native plants and degrading the quality of the project's plant communities. In the EA,<sup>84</sup> staff recommended that Loup Power District develop an invasive species monitoring plan to determine the effectiveness of

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<sup>81</sup> See final EA at 284.

<sup>82</sup> See final EA at 140.

<sup>83</sup> See final EA at 284 and 285.

<sup>84</sup> See final EA at 285 and 286.

Loup Power District's current monitoring and control efforts for invasive species, and ensure the continued protection of native plant communities. Article 409 requires the plan.

#### I. Microcystin Signage

113. Nebraska DEQ provides Loup Power District with microcystin sampling results for Lake North. If microcystin concentrations exceed 20 ppb, Loup Power District posts "Health Alert" signs at the affected reservoir's public access points at Lake North, temporarily closing the affected waterbody to full-body contact activities, including swimming, wading, and water skiing. Loup Power District proposes to continue to post signs at the Lake North reservoir's public access points if Nebraska DEQ's microcystin results exceed 20 ppb.

114. In the EA,<sup>85</sup> staff determined Loup Power District's proposal would adequately inform recreationists when they should avoid wading or swimming. Article 412 requires this measure.

#### J. Recreation

115. Fishing, boating, and riding off-highway vehicles are popular activities at the project. Loup Power District proposes to implement the Recreation Plan that contains measures to: (1) install a volleyball court and restroom at Park Camp; (2) construct a barrier-free fishing pier at Lake North Park; (3) implement a no-wake zone in Lake North to improve fishing opportunities; (4) construct a walking/biking trail along the southeast shore of Lake Babcock; (5) continue to prohibit vehicle access to Tailrace Park to reduce vandalism; and (6) continue to operate and maintain the Headworks OHV Park if an organization, such as the Nebraska OHVA, would be an active partner in operating and maintaining the facility.<sup>86</sup>

116. In the EA,<sup>87</sup> staff concluded that implementing the proposed Recreation Plan would enhance existing recreational facilities at the project. However, the proposed Recreation Plan does not include a provision to operate and maintain project recreation facilities. Therefore, Article 413 requires Loup Power District to develop its proposed Recreation Plan for the project, but with a provision to operate and maintain project recreation facilities, as well as the modifications discussed below.

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<sup>85</sup> See final EA at 253.

<sup>86</sup> In a letter filed July 30, 2012, Loup Power District states that if the current informal agreement for Headworks OHV Park terminates in the future, it would not be able to maintain Headworks OHV Park as currently used, and that it would close the facility.

<sup>87</sup> See final EA at 247-249.

117. In the EA,<sup>88</sup> staff recommended modifying the proposed Recreation Plan to include a provision to remove playground equipment at Tailrace Park, because the park has experienced vandalism and property damage, and less than 3 percent of the recreational users surveyed use the equipment. Article 413 requires that the Recreation Plan include this staff-recommended provision.

118. Loup Power District proposes to continue to operate and maintain the Headworks OHV Park if a third party organization will assist in operating and maintaining the facility. In the EA,<sup>89</sup> staff concluded that that Loup Power District must ensure the operation and maintenance of the Headworks OHV Park, regardless of whether it does so itself or hires a third party. In comments on the final EA, Loup Power District states that the Nebraska OHVA, a third party who helped Loup Power District operate and maintain the Headworks OHV Park, has disbanded, and therefore, is no longer able to assist with operation and maintenance. Loup Power District states that it will be unable to operate and maintain Headworks OHV Park if a third party does not assist with operating the facility. Because Headworks OHV Park is a project-related recreation facility, Loup Power District is ultimately responsible for operating and maintaining it. Article 413 therefore requires Loup Power District to provide for the operation and maintenance of Headworks OHV Park.

#### ADMINISTRATIVE PROVISIONS

##### A. Annual Charges

119. The Commission collects annual charges from licensees for administration of Part I of the FPA. Article 201 provides for the collection of these annual charges.

120. Article 201 provides that the project's authorized installed capacity for this purpose is 50,937 kilowatts (50.937 MW).<sup>90</sup> In the final EA, staff used 53.4 MW as the capacity of the Loup Project, based on information provided in the license application. This figure is based on the sum of the project's generators, as described in Exhibit A of the application. However, a project's authorized installed capacity is defined as the lesser of the ratings of the generator or turbine units.<sup>91</sup> As described in the license application, Loup Power District sequentially rehabilitated and modernized all six of the project's generating units from 2004 to 2007, as authorized in the Commission's 2003 order. In this case, it

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<sup>88</sup> See final EA at 250 and 251.

<sup>89</sup> See final EA at 249 and 250.

<sup>90</sup> See 105 FERC ¶ 62,235 (2003); see also 112 FERC ¶ 62,138 (2005).

<sup>91</sup> See 18 C.F.R. § 11.1(i) (2016).

appears that the capacity of the upgraded turbines is lower than the capacity of the generators, yielding an authorized installed capacity for the project of 50.937 MW. To ensure that the Commission has accurate information on the project's authorized installed capacity, this order (ordering paragraph D) requires Loup Power District to file an as-built Exhibit A describing the actual capacities of the upgraded turbines and generators. Based on this information, the Commission will amend Article 201, if necessary, to update the project's authorized installed capacity.

B. Exhibit F and G Drawings

121. Commission regulations require that licensees file Exhibit G drawings that include within the project boundary all principal project works and other features necessary for the operation and maintenance of the project.<sup>92</sup> Loup Power District proposes to remove three areas of land that are not necessary for project operation<sup>93</sup> from the project boundary. In the EA,<sup>94</sup> staff determined that the lands were not needed for project operation and maintenance or for other project purposes. As such, the lands should not be included in the project boundary. Loup Power District also proposes to add three areas of land that are related to its proposed license requirements.<sup>95</sup> In the EA,<sup>96</sup> staff determined: (1) the 5.9 acres within Lake Babcock Park were needed to ensure continued operation and maintenance of the recreation facility; (2) the 0.3-acre parcel was necessary for operating and maintaining the power canal; (3) and the 7.7 acres immediately downstream of the outlet weir were necessary for project operation. Therefore, these parcels must be enclosed within the project boundary.

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<sup>92</sup> See 18 C.F.R. § 4.41(h)(2) (2016).

<sup>93</sup> The three areas of land proposed to be removed from the project boundary include: (1) 36.1 acres located north of, and adjacent to, the north sand management area; (2) 25.2 acres corresponding to about 5,600 feet of the Lost Creek Ditch south of the 916 siphon; and (3) 12.5 acres located on the east side of the power canal immediately north of East 53<sup>rd</sup> Street.

<sup>94</sup> See EA at 252.

<sup>95</sup> The three areas of land proposed to be added to the project boundary include: (1) 5.9 acres within Lake Babcock Park; (2) 0.3 acre located on the east side of the tailrace canal immediately south of East 8<sup>th</sup> Street; and (3) 7.7 acres located within the channel of the lower Platte River at the tailrace canal confluence.

<sup>96</sup> See EA at 252.

122. The revised Exhibit G drawings, filed on December 28, 2012, show the aforementioned changes and, therefore, are approved. The revised Exhibit F drawings, filed on July 31, 2012, are also approved. The Commission requires licensees to file sets of the approved Exhibit F and G drawings in electronic file format. Article 202 requires the filing of these drawings.

C. Headwater Benefits

123. Some projects directly benefit from headwater improvements that were constructed by other licensees, the United States, or permittees. Article 203 requires the licensee to reimburse such entities for these benefits if they were not previously assessed and reimbursed.

D. Use and Occupancy of Project Lands and Waters

124. Requiring a licensee to obtain prior Commission approval for every use and occupancy of project land would be unduly burdensome. Therefore, Article 415 allows the licensee to grant permission, without prior Commission approval, for the use and occupancy of project lands for such minor activities as landscape planting. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and environmental values of the project.

E. Review of Final Plans and Specifications

125. Article 301 requires the licensee to coordinate with the Commission's Division of Dam Safety and Inspections – Chicago Regional Office any modifications resulting from environmental requirements that would affect project works or operation.

#### STATE AND FEDERAL COMPREHENSIVE PLANS

126. Section 10(a)(2) of the FPA<sup>97</sup> 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.<sup>98</sup> Under that section, federal and state agencies filed nine comprehensive plans that address various resources in Nebraska. Staff identified and reviewed these plans and found they are relevant to this project.<sup>99</sup> No conflicts were found.

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<sup>97</sup> 16 U.S.C. § 803(a)(2)(A) (2012).

<sup>98</sup> Comprehensive plans for this purpose are defined at 18 C.F.R. § 2.19 (2016).

<sup>99</sup> The list of applicable plans can be found in section 5.4, Consistency with Comprehensive Plans, of the final EA for the project.

## APPLICANT'S PLANS AND CAPABILITIES

127. In accordance with sections 10(a)(2)(C) and 15(a) of the FPA,<sup>100</sup> staff evaluated Loup Power District's record as a licensee for these areas: (1) conservation efforts; (2) compliance history and ability to comply with the new license; (3) safe management, operation, and maintenance of the project; (4) ability to provide efficient and reliable electric service; (5) need for power; (6) transmission services; (7) cost effectiveness of plans; and (8) actions affecting the public. This order adopts staff's findings in each of the following areas.

## A. Conservation Efforts

128. Section 10(a)(2)(C) of the FPA<sup>101</sup> requires the Commission to consider a State or municipal applicant's electricity consumption efficiency improvement program, including its plans, performance, and capabilities for encouraging or assisting its customers to conserve electricity cost-effectively, taking into account the published policies, restrictions, and requirements of state regulatory authorities. Section 16.10 of the Commission's regulations requires an applicant for a new license to include in its application a discussion of its record in encouraging energy conservation. Because Loup Power District sells all project power to Nebraska Power District, its ability to influence end-users is limited. However, Loup Power District has an energy conservation program and actively promotes energy efficiency among its retail distribution customers. Staff concludes that the Loup Power District is making a reasonable effort in encouraging energy conservation.

## B. Compliance History and Ability to Comply with the New License

129. Based on a review of Loup Power District's compliance with the terms and conditions of the existing license, staff finds that Loup Power District's overall record of making timely filings and compliance with its license is satisfactory. Therefore, staff finds that Loup Power District can satisfy the conditions of a new license.

## C. Safe Management, Operation, and Maintenance of the Project

130. Staff has reviewed Loup Power District's management, operation, and maintenance of the Loup Project pursuant to the requirements of 18 C.F.R. Part 12 and the Commission's Engineering Guidelines and periodic Independent Consultant's Safety Inspection Reports. Staff concludes that the dam and

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<sup>100</sup> 16 U.S.C. §§ 803(a)(2)(C) and 808(a) (2012).

<sup>101</sup> 16 U.S.C. § 803(a)(2)(C) (2012).

other project works are safe, and that there is no reason to believe that Loup Power District cannot continue to safely manage, operate, and maintain these facilities under a new license.

D. Ability to Provide Efficient and Reliable Electric Service

131. Staff has reviewed Loup Power District's plans and its ability to operate and maintain the project in a manner most likely to provide efficient and reliable electric service. Staff's review indicates that Loup Power District regularly inspects the project turbine generator units to ensure they continue to perform in an optimal manner, and schedules maintenance to minimize effects on energy production. Staff's review further indicates that, since the project has been in operation, Loup Power District has undertaken several initiatives to ensure the project is able to operate reliably into the future, such as making major capital improvements by completing a major rehabilitation of the turbine generating units, replacing major electrical and protective equipment, and installing a sophisticated supervisory control and data acquisition system. Staff concludes that the Loup Power District is capable of operating the project to provide efficient and reliable electric service in the future.

E. Need for Power

132. The project as licensed will provide hydroelectric generation to meet part of the region's power requirements, resource diversity, and capacity needs. As licensed, the project will have an installed capacity of 50.937 MW and generate approximately 162,675 MWh per year.

133. The North American Electric Reliability Corporation (NERC) annually forecasts electrical supply and demand nationally and regionally for a 10-year period. The Loup Project is located in the Midwest Reliability Organization (MRO) of the NERC. Although the Nebraska members belong to the MRO Regional Entity, the NERC assessment was performed on the Southwest Power Pool (SPP) Assessment Area, which includes the Nebraska members. NERC's 2015 Long-Term Reliability Assessment designates summer as the peak season for the planning reserve margin<sup>102</sup> in the SPP Assessment Area. The planning reserve margin is forecasted to range from 26.48 percent in 2016 to 11.26 percent in 2025. The SPP Assessment Area is thus forecast to meet SPP's target reserve margin of 13.6 percent through the year 2023, but fall below the target reserve margin in 2024 and 2025 at 13.26 and 11.26 percent, respectively.

134. Staff concludes that power from the Loup Project would continue to help meet a need for power in the SPP region in both the short- and long-term. The project provides low-cost power that

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<sup>102</sup> Planning reserve margin is approximately equivalent to the following: (capacity minus demand) divided by demand. Planning reserve margin replaced capacity margin for NERC assessments in 2009.

displaces generation from non-renewable sources. Displacing the operation of non-renewable facilities could continue to avoid some power plant emissions, thus continuing an environmental benefit.

#### F. Transmission Services

135. With the Loup Project as the only generation asset, Loup Power District's transmission system is limited to the underground cable buses connecting the project powerhouses to the step-up transformers in the adjacent substations where the project interconnects with the grid. Loup Power District proposes no changes that would affect its own, or other transmission services in the region.

#### G. Cost Effectiveness of Plans

136. Loup Power District proposes several measures and plans to enhance fish, wildlife, terrestrial, recreation, and cultural resources at the project. Based on Loup Power District's record as an existing licensee, staff concludes that these proposals are likely to be implemented in a cost-effective manner.

#### H. Actions Affecting the Public

137. The Loup Power District actively develops, improves, and maintains recreational opportunities at the project, and protects and preserves the historical and cultural resources associated with the project. Loup Power District also provides clean, renewable energy and employment opportunities in the local area.

### PROJECT ECONOMICS

138. In determining whether to issue a new license for an existing project, the Commission considers a number of public interest factors, including the economic benefits of project power. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,<sup>103</sup> the Commission uses current costs to compare the costs of the project and likely alternative power with no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and of reasonable alternatives to project power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

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<sup>103</sup> 72 FERC ¶ 61,027 (1995).

139. In applying this analysis to the Loup Project, staff considered three options: no action, Loup Power District's proposal, and the project as licensed herein.<sup>104</sup> Under the no action alternative, the project would continue to operate as it does now. The project has an installed capacity of 50.937 MW, and generates an average of 178,874 MWh of electricity annually. The average annual project cost is about \$6.98 million, or \$39.03/MWh. Multiplying staff's estimate of average generation by the alternative power cost of \$55.64/MWh<sup>105</sup> yields a total value of the project's power of \$9.95 million in 2015 dollars. To determine whether the proposed project is currently economically beneficial, staff subtracts the project's cost from the value of the project's power. Therefore, the project costs \$2.97 million, or \$16.61/MWh, less to produce power than the likely alternative cost of power.

140. As proposed by Loup Power District, the levelized annual cost of operating the project is \$7.63 million, or \$42.64/MWh. Based on the same amount of estimated average annual generation of 178,874 MWh and alternative power cost of \$55.64/MWh, staff determines that the total value of the project's power would be \$9.95 million in 2015 dollars. Therefore, in the first year of operation, the project would cost \$2.32 million, or \$13.00/MWh, less than the likely alternative cost of power.

141. As licensed herein, with the mandatory conditions and staff measures, the levelized annual cost of operating the project would be about \$7.71 million, or \$46.94/MWh. Based on an estimated average generation of 162,675 MWh as licensed, the project would produce power valued at \$9.05 million when multiplied by the \$55.64/MWh value of the project's power. Therefore, in the first year of operation, project power would cost \$1.41 million, or \$8.70/MWh, less than the likely cost of alternative power.

142. In considering public interest factors, the Commission takes into account that hydroelectric projects offer unique operational benefits to the electric utility system (ancillary service benefits). These benefits include the ability to help maintain the stability of a power system, such as by quickly adjusting power output to respond to rapid changes in system load; and to respond rapidly to a major utility system or regional blackout by providing a source of power to help restart fossil-fuel based generating stations and put them back on line.

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<sup>104</sup> Details of staff's economic analysis for the project as licensed herein and for the other two alternatives are included in the final EA issued on July 5, 2016, in section 4.0, Developmental Analysis.

<sup>105</sup> Loup Project's alternative power cost is represented by the current contract price paid to Loup Power District by the Nebraska Power District, the purchaser of the project power. This price includes energy and capacity as well as on- and off-peak generation and ancillary services.

## COMPREHENSIVE DEVELOPMENT

143. Sections 4(e) and 10(a)(1) of the FPA<sup>106</sup> 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 must 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. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

144. The final EA for the project contains background information, analysis of effects, and support for related license articles. Based on the record of this proceeding, including the final EA and the comments thereon, licensing the Loup Project as described in this order would not constitute a major federal action significantly affecting the quality of the human environment. The project will be safe if operated and maintained in accordance with the requirements of this license.

145. Based on staff's independent review and evaluation of the Loup Project, recommendations from the resource agencies and other stakeholders, and the no-action alternative, as documented in the final EA, the project, as licensed herein, is best adapted to a comprehensive plan for improving or developing the Loup River.

146. This alternative is selected because: (1) issuance of a new license will serve to maintain a beneficial, dependable, and inexpensive source of electric energy; (2) the required environmental measures will protect and enhance fish and wildlife resources, water quality, recreational resources, and historic properties; and (3) the 50.937 MW of electric capacity comes from a renewable resource that does not contribute to atmospheric pollution.

## LICENSE TERM

147. Section 15(e) of the FPA<sup>107</sup> provides that any new license issued will be for a term that the Commission determines to be in the public interest, but not less than 30 years or more than 50 years. The Commission's general policy is to establish 30-year terms for projects with little or no redevelopment, new construction, new capacity, or environmental mitigation and enhancement measures; 40-year terms for projects with a moderate amount of such activities; and 50-year terms for

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<sup>106</sup> 16 U.S.C. §§ 797(e) and 803(a)(1) (2012).

<sup>107</sup> 16 U.S.C. § 808(e) (2012).

projects with extensive measures.<sup>108</sup> This license authorizes no new construction or new capacity, and only a minor amount of new environmental mitigation measures. Consequently, a 30-year license term for the Loup Project is appropriate.

#### ORDERING PARAGRAPHS AND PROJECT DESCRIPTION

##### The Director orders:

(A) This license is issued to Loup Power District (licensee), for a period of 30 years, effective the first day of the month in which this order is issued, to operate and maintain the Loup River Hydroelectric Project. This license is subject to the terms and conditions of the Federal Power Act (FPA), which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the licensee's interests in those lands, enclosed by the project boundary shown by Exhibit G, filed April 16, 2012, and amended on December 28, 2012.

<u>Exhibit G Drawing</u>	<u>FERC No. 1256-</u>	<u>Description</u>
Sheet G-1	2027	Project Boundary Map
Sheet G-2	2028	Project Boundary Map
Sheet G-3	2029	Project Boundary Map
Sheet G-4	2030	Project Boundary Map
Sheet G-5	2031	Project Boundary Map
Sheet G-6	2032	Project Boundary Map
Sheet G-7	2033	Project Boundary Map
Sheet G-8	2034	Project Boundary Map
Sheet G-9	2035	Project Boundary Map
Sheet G-10	2036	Project Boundary Map
Sheet G-11	2037	Project Boundary Map

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<sup>108</sup> See Consumers Power Co., 68 FERC ¶ 61,077 at 61,383-84 (1994).

Sheet G-12	2038	Project Boundary Map
Sheet G-13	2039	Project Boundary Map
Sheet G-14	2040	Project Boundary Map

(2) Project works consisting of: (a) a 11,869-foot-long earth and concrete dam including: (i) a 7,200-foot-long north sand-fill earthen dike with crest elevation at 1,586 feet mean sea level (msl), (ii) a 284-foot-long reinforced concrete intake gate structure comprising eleven 24-foot-long, 5-foot-high steel radial gates with sills at elevation 1,569.5 feet msl, (iii) a 64-foot-long reinforced concrete sluice gate structure comprising three 20-foot-long, 6-foot-high steel radial gates with sills at elevation 1,568 feet msl, (iv) a 1,321-foot-long, 6-foot-high concrete diversion weir with fixed crest elevation at 1,574 feet msl furnished with 2-foot-high sacrificial flashboards installed on about 550 feet of the northern end of the weir raising the crest of the dam to 1,576 feet msl, and (v) a 3,000-foot-long south sand-fill earthen dike with crest elevation at 1,585 feet msl; (b) a 2-mile-long, 200-foot-wide bottom, 16-foot-deep settling basin with a maximum hydraulic capacity of 3,500 cubic feet per second (cfs) and water surface elevation at 1,572 feet msl; (c) a 133.5-foot-long, 15.2-foot-high concrete weir with fixed crest elevation at 1,568.2 feet msl topped with a bridge-like superstructure consisting of nine 12.5-foot-long, 5.0-foot-high openings fitted with a 134-foot-wide, 5-foot-high steel trash screen; (d) a 10-mile-long, 73 to 39-foot-wide bottom, 14.3 to 19.5-foot water depth upper power canal with a maximum hydraulic capacity of 3,500 cfs flowing under: (i) Beaver Creek through a 550-foot-long, 12.5-foot-wide, 16-foot-high three-barrel concrete inverted siphon, (ii) Union Pacific railroad through a 67.5-foot-long, 11.67-foot-wide, 15-foot-high, three-barrel concrete inverted siphon, and (iii) Looking Glass Creek through a 420-foot-long, 12.5-foot-wide, 16-foot-high three-barrel concrete inverted siphon; (e) a 129-foot-long, 39-foot-wide, 87-foot-high reinforced concrete Monroe Powerhouse equipped with six 13-foot-wide, 31.25-foot-high trash racks and containing three vertical Francis turbines connected to three generators each rated at 2.488 megawatts (MW) and a 15.33-foot-wide radial bypass gate redirecting flows greater than 3,000 cfs total hydraulic capacity of the three turbines; (f) Monroe substation containing two transformers stepping up power from 6.9 kilovolts (kV) to 34.5 kV; (g) a 13-mile-long, 39-foot-wide bottom, 19.5-foot water depth lower power canal with a maximum hydraulic capacity of 3,500 cfs flowing: (i) under Dry/Cherry Creek through a 74-foot-long, 11.75-foot-wide, 15-foot-high three-barrel concrete inverted siphon, (ii) over 916 Siphon carrying Lost Creek through a 315.67-foot-long, 6.67-foot-wide, 5-foot-high three-barrel concrete inverted siphon, and (iii) under Union Pacific railroad (Oconee) through a 67.5-foot-long, 11.67-foot-wide, 15-foot-high three-barrel concrete inverted siphon; (h) a 227.5-foot-long, 9.4-foot-high concrete sawtooth weir; (i) Lake Babcock regulating reservoir with 867-acre surface area, 2,449 acre-feet maximum storage at full pool elevation of 1,531 feet msl; (j) Lake North regulating reservoir (connected to Lake Babcock by a concrete control structure with sill elevation at 1,520 feet msl) with 202 acres surface area, 1,187 acre-feet maximum storage at full-pool elevation of 1,531 feet msl; (k) a 1.5-mile-long, 108 to 94-foot-wide bottom, 17.2 to 22.2-foot water depth Columbus Powerhouse intake canal; (l) a 60-foot-long, 104-foot-wide, 40-foot-high Columbus Powerhouse inlet structure fitted with nine 9-foot-wide, 36.67-foot-high vertical steel trash rack panels; (m) three 20-foot-diameter, 385-foot-long steel penstocks; (n) a 180-foot-long, 57-foot-

wide, 115-foot-high Columbus Powerhouse containing three vertical Francis turbines connected to three generators each rated at 14.491 MW; (o) Columbus substation containing three transformers stepping up power from 13.8 kV to 115 kV; (p) a 5.5-mile-long, 42-foot-wide tailrace canal with a 19-foot water depth and transitioning to 600 feet wide over the last 550 feet; (q) a 700-foot-long, 5-foot-high concrete outlet weir with fixed crest elevation at 1,411.46 feet msl; (r) one 320-acre sand management area located on the north side of the settling basin (north sand management area) and one 400-acre sand management area located on the south side of the settling basin (south sand management area) storing sand dredged from the settling basin using a 3,000-horsepower hydraulic dredge; and (s) appurtenant facilities. There are no transmission lines associated with the project. The project interconnects with the electrical grid via underground bus cables at the Monroe and Columbus substations.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F shown below:

Exhibit A: The following section of Exhibit A filed on April 16, 2012: Section A, entitled "Project Description" as depicted on pages A-1 through A-18. However, on pages A-8 through A-13 there are differences in installed capacities compared to the installed capacities authorized in the December 31, 2003 amendment order.<sup>109</sup> Therefore, the licensee must file a revised Exhibit A as shown in ordering paragraph (D).

Exhibit F: The following Exhibit F drawings filed on April 16, 2012, and amended on July 31, 2012.

<u>Exhibit F Drawing</u>	<u>FERC No. 1256-</u>	<u>Description</u>
Sheet F-1	2001	General Plan at Intake
Sheet F-2	2002	Diversion Weir – General Plan and Sections
Sheet F-3	2003	Skimming Weir
Sheet F-4	2004	Power Canal Typical Sections
Sheet F-5	2005	Beaver Creek Siphon
Sheet F-6	2006	Railroad Siphon
Sheet F-7	2007	Looking Glass Creek Siphon

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<sup>109</sup> See 105 FERC ¶ 62,235 (2003).

Sheet F-8	2008	Monroe Powerhouse – General Plan of Development
Sheet F-9	2009	Monroe Powerhouse – Plans and Sections
Sheet F-10	2010	Monroe Powerhouse – Downstream Elevation
Sheet F-11	2011	Monroe Powerhouse – Right and Left End Elevations
Sheet F-12	2012	Dry/Cherry Creek Siphon (Sta. 721+29)
Sheet F-13	2013	916 Siphon (Sta. 816+67.9)
Sheet F-14	2014	Oconee Siphon (Sta. 946+47.9)
Sheet F-15	2015	Sawtooth Weir (Sta. 1363+00)
Sheet F-16	2016	Columbus Powerhouse – General Plan of Development
Sheet F-17	2017	Columbus Powerhouse – Generator Floor Plan
Sheet F-18	2018	Columbus Powerhouse – Platform Level Floor Plan
Sheet F-19	2019	Columbus Powerhouse – Intake Plan
Sheet F-20	2020	Columbus Powerhouse –Sectional View of Intake
Sheet F-21	2021	Columbus Powerhouse – Penstocks
Sheet F-22	2022	Columbus Powerhouse – Downstream Elevation
Sheet F-23	2023	Columbus Powerhouse –East and West End Elevations
Sheet F-24	2024	Columbus Powerhouse – Cross Sections
Sheet F-25	2025	Lost Creek Siphon (Sta. 1851+40.0)
Sheet F-26	2026	Outlet Weir

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The exhibits F and G described above are approved and made part of this license.

(D) Within 45 days of the date of issuance of this license, the licensee must file for Commission approval a complete as-built Exhibit A, including a description of the actual capacities of the

upgraded turbines and generators. The filing must include photographs showing the new rating capacity nameplates of each turbine and generating unit.

(E) This license is subject to the incidental take terms and conditions of the biological opinion submitted by the U.S. Fish and Wildlife Service under section 7 of the Endangered Species Act, as those conditions are set forth in Appendix A to this order.

(F) This license is also subject to the articles set forth in Form L-3 (Oct. 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the United States," (see 54 F.P.C. 1817 et seq.), as reproduced at the end of this order, and the following additional articles:

Article 201. Administrative Annual Charges. The licensee must pay the United States annual charges, effective the first day of the month in which the license is issued, and as determined in accordance with the provisions of the Commission's regulations in effect from time to time, for the purposes of reimbursing the United States for the cost of administration of Part I of the Federal Power Act. The authorized installed capacity for that purpose is 50.937 megawatts.

Article 202. Exhibit Drawings. Within 45 days of the date of issuance of this license, as directed below, the licensee must file two sets of the approved exhibit drawings and geographic information system (GIS) data in electronic file format on compact disks.

(a) Digital images of the approved exhibit drawings must be prepared in electronic format. Prior to preparing each digital image, the FERC Project-Drawing Number (i.e., P-1256-2001 through P-1256-2040) must be shown in the margin below the title block of the approved drawing. The licensee must file two separate sets of exhibit drawings in electronic format on compact disks with the Secretary of the Commission, ATTN: OEP/DHAC. Exhibit F drawings must be segregated from other project exhibits, and identified as Critical Energy Infrastructure Information (CEII) material under 18 CFR §388.113(c). Each drawing must be a separate electronic file, and the file name must include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, date of this License, and file extension in the following format [P-1256-2027, G-1, Project Boundary Map, MM-DD-YYYY.TIF]. All digital images of the exhibit drawings must meet the following format specification:

IMAGERY - black & white raster file

FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4 (also known as T.6 coding scheme)

RESOLUTION – 300 dots per inch (dpi) desired, (200 dpi min)

DRAWING SIZE FORMAT – 22" x 34" (minimum), 24" x 36" (maximum)

FILE SIZE – less than 1 megabyte desired

Each Exhibit G drawing that includes the project boundary must contain a minimum of three known reference points (i.e., latitude and longitude coordinates, or state plane coordinates). The points must be arranged in a triangular format for GIS georeferencing the project boundary drawing to the polygon data, and must be based on a standard map coordinate system. The spatial reference for the drawing (i.e., map projection, map datum, and units of measurement) must be identified on the drawing and each reference point must be labeled. In addition, each project boundary drawing must be stamped by a registered land surveyor.

(b) The licensee must file two separate sets of the project boundary GIS data on compact disks with the Secretary of the Commission, ATTN: OEP/DHAC. The data must be in a georeferenced electronic file format (such as ArcView shape files, GeoMedia files, MapInfo files, or a similar GIS format). The filing must include both polygon data and all reference points shown on the individual project boundary drawings. An electronic boundary polygon data file(s) is required for each project development. Depending on the electronic file format, the polygon and point data can be included in single files with multiple layers. The georeferenced electronic boundary data file must be positionally accurate to  $\pm 40$  feet in order to comply with National Map Accuracy Standards for maps at a 1:24,000 scale. The file name(s) must include: FERC Project Number, data description, date of this License, and file extension in the following format [P-1256, boundary polygon/or point data, MM-DD-YYYY.SHP]. The data must be accompanied by a separate text file describing the spatial reference for the georeferenced data: map projection used (i.e., UTM, State Plane, Decimal Degrees, etc.), the map datum (i.e., North American 27, North American 83, etc.), and the units of measurement (i.e., feet, meters, miles, etc.). The text file name must include: FERC Project Number, data description, date of this License, and file extension in the following format [P-1256, project boundary metadata, MM-DD-YYYY.TXT].

Article 203. Headwater Benefits. If the licensee's project was directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee must reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license. The benefits will be assessed in accordance with Part 11, Subpart B, of the Commission's regulations.

Article 301. Project Modification Resulting From Environmental Requirements. Any permanent or temporary modification which may affect the project works or operations shall be coordinated with the Commission's Division of Dam Safety and Inspections – Chicago Regional Engineer at the beginning of the planning and design phase. This includes those modifications resulting from the license environmental requirements. This schedule is to allow sufficient review time for the Commission to

insure that the proposed work does not adversely affect the project works, dam safety or project operation.

**Article 401.** Loup Power Canal Bank Monitoring Plan. Within 1 year of license issuance, the licensee must file with the Commission for approval a plan to periodically monitor the bank stability of the Loup power canal (power canal) between the intake gate structure and the outlet weir for the term of the license.<sup>110</sup> Monitoring results will be used to identify any areas of bank instability within the power canal and the need for any remediation.

The plan, at a minimum, must include:

(1) a description of the methods that will be used to periodically monitor the bank stability of the power canal to determine the extent and magnitude of any erosion occurring in the power canal during project operation;

(2) the monitoring frequency;

(3) the criteria that will be used to assess whether the canal bank requires stabilization or project operation requires modification;

(4) the potential measures that will be used to mitigate areas of canal bank determined to be unstable;

(5) a provision to notify the Commission prior to implementing any structural measures or in the event of an emergency, as soon as possible, but no later than 10 days, after implementing any structural measure or repair;

(6) a provision to prepare and file a report of bank stability monitoring results for the years in which monitoring occurs, including recommendations to address areas of bank instability prepared after consultation with Nebraska Game and Parks Commission (Nebraska Game and Parks); and

(7) a provision to file a report with the Commission within 10 days of any changes to the plan.

The plan must be prepared after consultation with Nebraska Game and Parks. The licensee must include with the plan documentation of consultation, copies of recommendations on the completed plan after it has been prepared and provided to Nebraska Game and Parks, and specific descriptions of how Nebraska Game and Parks' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for Nebraska Game and Parks to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

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<sup>110</sup> Components of the power canal to be monitored include the settling basin, upper power canal, lower power canal, intake canal, and tailrace canal.

The Commission reserves the right to require changes to the plan. The licensee must not begin implementing the plan until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 402. Loup River Bypassed Reach Stream Bank Monitoring Plan. Within 1 year of license issuance, the licensee must file with the Commission, for approval, a plan to monitor for bank stability in the Loup River bypassed reach caused by implementing Articles 404 and 406,<sup>111</sup> as well as from other processes.

The plan, at a minimum, must include:

- (1) a provision to monitor the stability of the Loup River bypassed reach for a minimum of 5 years;
- (2) the monitoring frequency;
- (3) the identification of the locations that will be monitored in the Loup River bypassed reach, which must include as a minimum, areas adjacent to and immediately downstream of the south sand management area (include maps of the monitoring locations);
- (4) a description of the methods that will be used to monitor stream bank stability to determine the extent and magnitude of stream bank erosion;
- (5) the criteria that will be used to assess whether the stream bank requires stabilization;
- (6) the potential measures that will be used to mitigate areas of stream bank determined to be unstable;
- (7) a provision to notify the Commission prior to implementing any structural measures or in the event of an emergency, as soon as possible, but no later than 10 days after implementing any structural measure or repair;
- (8) a provision to prepare and file a report of stream bank stability monitoring results for the years in which monitoring occurs, including recommendations to address areas of stream bank instability prepared after consultation with Nebraska Game and Parks Commission (Nebraska Game and Parks); and
- (9) a provision to file a report with the Commission within 10 days of any changes to the plan.

The plan must be prepared after consultation with Nebraska Game and Parks. The licensee must include with the plan documentation of consultation, copies of recommendations on the

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<sup>111</sup> Implementing Articles 404 and 406 will alter the flow in the Loup River bypassed reach and could lead to instability of the stream banks near the south sand management area.

completed plan after it has been prepared and provided to Nebraska Game and Parks, and specific descriptions of how Nebraska Game and Parks' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for Nebraska Game and Parks to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Implementation of the plan must not begin until the licensee is notified by the Commission that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 403. Soil Erosion and Sediment Control Plan. At least 60 days prior to the start of any construction activities associated with the restroom, volleyball court, fishing pier, and new trail segment required by Article 413, the licensee must file with the Commission for approval a soil erosion and sediment control plan.

The plan must be based on actual-site geological, soil and groundwater conditions, and on site specific designs of the restroom, volleyball court, fishing pier, and new trail segment required by Article 413. The plan, at a minimum, must include:

- (1) a detailed description of actual site conditions;
- (2) specific measures proposed to control erosion, to prevent slope instability, and to minimize the quantity of sediment resulting from construction of the project's recreation facilities;
- (3) measures to restore disturbed areas with native vegetation, after construction of the recreation facilities are completed;
- (4) detailed descriptions, functional conceptual drawings, and specific topographic locations of the soil erosion and sediment control measures; and
- (5) a specific implementation schedule and details for monitoring and maintenance of the proposed control measures.

The licensee must prepare the plan after consultation with Nebraska Department of Environmental Quality (Nebraska DEQ). The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to Nebraska DEQ, and specific descriptions of how Nebraska DEQ's comments are accommodated by the plan. The licensee must allow a minimum of 30 days for Nebraska DEQ to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on geological, soil, and groundwater conditions at the site.

The Commission reserves the right to require changes to the plan. The licensee must not begin construction activities for the recreation facilities until Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 404. Minimum Flows in the Loup River Bypassed Reach. The licensee must operate the project to maintain a minimum flow of 275 cubic feet per second (cfs) or inflow, whichever is less, in the Loup River bypassed reach as measured at a point upstream of its confluence with Beaver Creek, from April 1 through September 30; and 100 cfs or inflow, whichever is less, from October 1 through March 31, to protect water quality and aquatic resources, and to enhance food resources and habitat for Interior least terns, piping plovers, Rufa red knots, and whooping cranes in the Loup River bypassed reach and lower Platte River. Inflow, as defined here, is the instantaneous flow at the point of measurement in the Loup River bypassed reach obtained when it has been at least 6 hours since the project last diverted flow into the Loup power canal.

The minimum flow requirements may be temporarily modified if required by operating emergencies beyond the control of the licensee; to alleviate ice-jam formation or flooding in the Loup River bypassed reach; and for short periods upon mutual agreement between the licensee and U.S. Fish and Wildlife Service. If the minimum flow is so modified, the licensee must notify the Commission as soon as possible, but no later than 10 days, after each such incident.

Article 405. Run-of-Canal Operation. The licensee must operate the Loup power canal in a run-of-canal mode each year from May 1 through June 7, to facilitate pallid sturgeon migrations in the lower Platte River. In operating in a run-of-canal mode, the licensee must maintain a constant water surface elevation in Lake North and Lake Babcock such that at any point in time, the sum of all outflows from the lakes approximates the sum of all inflows to the lakes.

The run-of-canal operation requirement may be temporarily modified if required by operating emergencies beyond the control of the licensee or to alleviate flooding in the Loup River bypassed reach, and for short periods upon mutual agreement between the licensee and U.S. Fish and Wildlife Service. If run-of-canal operation is so modified, the licensee must notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 406. Maximum Diversion of Flow into the Loup Power Canal. The licensee must limit the maximum flow diverted into the Loup power canal so as not to exceed 2,000 cubic feet per second, as measured at a point in the Loup power canal between the intake gate structure and the sawtooth weir, from March 1 through June 30, to enhance food resources and habitat for Interior least terns, piping plovers, Rufa red knots, and whooping cranes in the Loup River bypassed reach and lower Platte River.

The maximum diversion flow requirement may be temporarily modified if required by operating emergencies beyond the control of the licensee or to alleviate ice-jam formation or flooding in the Loup River bypassed reach, and for short periods upon mutual agreement between the licensee and U.S. Fish and Wildlife Service. If the maximum diversion flow is so modified, the licensee must notify the Commission as soon as possible, but no later than 10 days, after each such incident.

Article 407. Operation Compliance Monitoring Plan. Within 6 months of license issuance, the licensee must file with the Commission for approval, an operation compliance monitoring plan that describes how the licensee will comply with the operational requirements of this license.

The plan, at a minimum, must include:

(1) a description of how the licensee will document compliance with the operational requirements of the license, including: (a) operating the project to provide minimum flows in the Loup River bypassed reach, as required by Article 404, (b) operating the project in an instantaneous run-of-canal mode, as required by Article 405, and (c) operating the project to limit the maximum diversion of flow from the Loup River into the power canal as required by Article 406;

(2) a description of the exact location of all gages and/or measuring devices, or techniques that would be used to monitor compliance with the operational requirements of the license, the procedures for maintaining and calibrating the monitoring equipment, the frequency of recording for each gage and/or measuring device, the protocols or methods to be used for reporting the monitoring data to the Commission, and a monitoring schedule;

(3) a provision to maintain a log of project operation;

(4) a description of the steps the licensee will take to ensure minimum flows are maintained during planned and emergency shutdowns;

(5) a provision for reporting to the Commission as soon as possible, but no later than 10 days after discovery, deviations from the operational requirements of the license, along with proposed actions that will be taken to avoid reoccurrence of the deviation; and

(6) an implementation schedule.

The licensee must prepare the plan after consultation with U.S. Fish and Wildlife Service and Nebraska Game and Parks Commission. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The licensee must not begin implementing the plan until the Commission notifies the licensee that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 408. Hot Weather Fish Protection for the Loup Power Canal. To protect fishery resources in the Loup power canal (power canal), the licensee must not conduct any non-emergency maintenance activities that require the drawdown of water in the power canal during times when the water temperature in the power canal is at or above 90 degrees Fahrenheit.

Article 409. Invasive Species Monitoring Plan. Within 1 year of license issuance, the licensee must file with the Commission, for approval, a plan to monitor for the presence of invasive species at the project. The purpose of the plan is to document the extent of invasive species present at the project over the license term, and if such species are having a substantial adverse effect on fish and wildlife

populations or public access, implement measures to limit their spread. The plan must include, but not necessarily be limited to, the following:

- (1) a description of the licensee's proposed monitoring methods;
- (2) the proposed frequency of monitoring;
- (3) the proposed criteria to be used to determine when control measures will be implemented;
- (4) a schedule for filing monitoring reports with Platte County Weed Control District, Nebraska Game and Parks Commission (Nebraska Game and Parks), U.S. Fish and Wildlife Service (FWS), and the Commission.

The licensee must prepare the plan after consultation with the Platte County Weed Control District, Nebraska Game and Parks, and FWS. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The licensee must not begin until the Commission notifies the licensee that the plan is approved. Upon Commission approval the licensee must implement the plan, including any changes required by the Commission.

Article 410. Migratory Bird Protection. Before beginning any action that could result in a take of migratory birds, including bald eagles, and their eggs, young, or active nests, the licensee must implement the following measures as described in section 5.6.4.2 and 5.6.4.3 of the license application filed on April 16, 2012:

- (1) a qualified biologist will conduct a field survey of the affected habitats and structures to determine the absence or presence of nesting migratory birds;
- (2) survey documentation will be prepared and will include biologist qualifications, survey methods, data and time of survey, species observed/heard and location, avoidance measures implemented, and circumstances where it has been determined that one or more active bird nests cannot be avoided; and
- (3) the licensee must consult with U.S. Fish and Wildlife Service and Nebraska Game and Parks Commission on the survey results.

Article 411. Interior Least Tern, Piping Plover, and Rufa Red Knot Management Plan. Within 6 months of license issuance, the licensee must file with the Commission for approval, a plan to monitor and mitigate for project effects on the Interior least tern (least tern), piping plover, and Rufa red knot (red knot) in the Loup River bypassed reach and the project-affected reach of the lower Platte River, not to extend beyond U.S. Geological Survey gage no. 0696000 at North Bend, Nebraska.

The plan, at a minimum, must include:

(1) management goals and objectives, as well as a description of any measures to be implemented to protect, mitigate and/or enhance on- and off-river least tern and piping plover nesting habitat affected by the project;

(2) a provision to monitor the presence and habitat use of least terns, piping plovers, and red knots, through a minimum of six annual surveys, including assessment of any changes in least tern and piping plover presence, habitat use, and sandbar formation resulting from the operational requirements of Articles 404 and 406;

(3) a provision for an initial monitoring study during the first year of the license, and an annual monitoring survey for the following 5 years to include: (a) a description of the survey schedule, location, and methods, (b) a count of least tern and piping plover individuals, colonies, and nests observed, (c) a count and location of red knots incidentally observed while monitoring for least terns and piping plovers, (d) a map, to be filed as privileged with the Commission, showing where the least tern and piping plover nests and colonies are located, (e) a timeline and schedule for conducting subsequent surveys, and (f) provisions for filing the results of the annual surveys with the Commission by December 31 of each monitoring year, after agency consultation;

(4) a provision for a final monitoring and management report to be submitted to the Commission no later than 180 days following the completion of the 5-year monitoring period, prepared after consultation with the U.S. Fish and Wildlife Service (FWS) and Nebraska Game and Parks Commission (Nebraska Game and Parks), consisting of: (a) least tern, piping plover, and red knot population and habitat changes in the project-affected reaches over the 5-year monitoring period, (b) project effects on least tern, piping plover, and red knot populations and habitat, including effects associated with the altered flow regime required by Articles 404 and 406, and (c) any additional mitigation measures necessary to mitigate for project effects on populations of least terns, piping plovers, and red knots in the project-affected reaches, including the need for habitat modification measures such as reshaping sandbars/point bars and removing herbaceous vegetation; and

(5) management provisions for the north sand management area that include: (a) policies and procedures for ensuring that project dredging and the sand removal operation in the project settling basin will not adversely affect least terns or piping plovers nesting in the north sand management area, (b) protection, mitigation, and enhancement measures to be implemented in the north sand management area to ensure that it remains a viable source of off-river nesting for least terns and piping plovers, and (c) a schedule to periodically re-evaluate the management provisions for the north sand management area.

The licensee must prepare the plan after consultation with FWS and the Nebraska Game and Parks. The licensee must include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies and specific descriptions of how the agencies' comments are accommodated by the plan. The licensee must allow a minimum of 30 days for the agencies to comment and to make recommendations before filing

the plan with the Commission. If the licensee does not adopt a recommendation, the filing must include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The licensee must not begin implementing the plan until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee must implement the plan, including any changes required by the Commission.

Article 412. Microcystin Signage. When notified by Nebraska Department of Environmental Quality (Nebraska DEQ) that the microcystin levels in Lake North exceed 20 parts per billion (ppb), the licensee must post signs at all of the public access points to Lake North stating its temporary closure to full-body water contact activities, which may include, but are not limited to, swimming, wading, and water skiing. The signs must remain posted until the licensee is notified by Nebraska DEQ that microcystin levels in Lake North have returned to 20 ppb or less.

Article 413. Recreation Plan. Within 6 months of license issuance, the licensee must file with the Commission, for approval, a revised Recreation Plan that includes, at a minimum, the provisions of the Recreation Plan filed on April 16, 2012, and the following:

(1) a provision to continue operating and maintaining: (a) Headworks Park, Lake Babcock Park, Lake North Park, Columbus Powerhouse Park, Tailrace Park, and (b) three trails, Two Lakes Trail, Bob Lake Trail, and the Robert White Trail, located along the north, west, and south perimeters of the Lake Babcock and Lake North Parks;

(2) a provision to remove the playground equipment from Tailrace Park within 1 year of license issuance;

(3) conceptual drawings for the restroom at Headworks OHV Park, the volleyball court at Park Camp, which is a part of Headworks Park, the fishing pier at Lake North Park, and the trail segment along the southeast shore of Lake Babcock;

(4) procedures to ensure continued operation and maintenance of the Headworks OHV Park;

(5) a discussion about how the needs of the disabled will be considered in the planning and design of the proposed recreation facilities; and

(6) an implementation schedule for all of the revised plan's provisions.

The Commission reserves the right to require changes to the plan. The licensee must not begin implementing the plan until the Commission notifies the licensee that the plan is approved. Upon Commission approval, the licensee must implement the plan and schedule, including any changes required by the Commission.

Article 414. Programmatic Agreement and Historic Properties Management Plan. The licensee must implement the "Programmatic Agreement Between the Federal Energy Regulatory Commission and the Nebraska Historic Preservation Officer for Managing Historic Properties that May be Affected by Issuance of a License to Loup River Public Power District for the Continued Operation of the Loup River Hydroelectric Project in Nance and Platte Counties, Nebraska (FERC No. 1256)," executed on

June 16, 2014, and including but not limited to, the Historic Properties Management Plan (HPMP), filed with the license application on April 16, 2012, for the project. In the event that the Programmatic Agreement is terminated, the licensee will continue to implement the provisions of its approved HPMP.

The Commission reserves the authority to require changes to the HPMP at any time during the term of the license.

Article 415. Use and Occupancy. (a) In accordance with the provisions of this article, the licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 water craft at a time and where said facility is intended to serve single-family type dwellings; (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and (4) food plots and other wildlife enhancement. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap will be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and will not change the basic contour of the impoundment shoreline. To implement this paragraph (b), the licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the licensee's costs of administering the permit program. The Commission reserves the right to require the licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The licensee may convey easements or rights-of-way across, or leases of project lands for: (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project impoundment. No later than January 31 of each year, the licensee shall file a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 water craft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina; (6) recreational development consistent with an approved report on recreational resources of an Exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is 5 acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 60 days before conveying any interest in project lands under this paragraph (d), the licensee must file a letter with the Commission, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Commission's authorized representative, within 45 days from the filing date, requires the licensee to file an application for prior approval, the licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved report on recreational resources of an

Exhibit E; or, if the project does not have an approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to ensure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project lands and waters.

(4) The Commission reserves the right to require the licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised Exhibit G drawings will be filed for approval for other purposes.

(g) The authority granted to the licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(G) The licensee must serve copies of any Commission filing required by this order on any entity specified in the order to be consulted on matters related to that filing. Proof of service these entities must accompany the filing with the Commission.

(H) This order constitutes final agency action. Any party may file a request for rehearing of this order within 30 days from the date of its issuance, as provided in section 313(a) of the FPA, 16 U.S.C. § 8251 (2012), and section 385.713 of the Commission's regulations, 18 C.F.R. § 385.713 (2016). The filing of a request for rehearing does not operate as a stay of the effective date of this license or of any other date specified in this order. The licensee's failure to file a request for rehearing constitutes acceptance of this order.

Terry L. Turpin

Director

Office of Energy Projects

Project No. 1256-031

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Form L-3

(October, 1975)

## FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED  
MAJOR PROJECT AFFECTING NAVIGABLE  
WATERS OF THE UNITED STATES

**Article 1.** The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

**Article 2.** No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: *Provided, however,* That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

**Article 3.** The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such

alteration as the Commission may direct.

**Article 4.** The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

**Article 5.** The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of

this article.

**Article 6.** In the event the project is taken over by the United States upon the termination of the license as provided in Section 14 of the Federal Power Act, or is transferred to a new licensee or to a nonpower licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: **Provided,** That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

**Article 7.** The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

**Article 8.** The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

**Article 9.** The Licensee shall, after notice and opportunity for hearing, install

additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

**Article 10.** The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

**Article 11.** Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

**Article 12.** The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

**Article 13.** On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar

uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

**Article 14.** In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

**Article 15.** The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

**Article 16.** Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

**Article 17.** The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

**Article 18.** So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: *Provided*, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

**Article 19.** In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

**Article 20.** The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

**Article 21.** Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the

Army, in charge of the locality.

**Article 22.** Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.

**Article 23.** The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.

**Article 24.** The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.

**Article 25.** The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.

**Article 26.** If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

**Article 27.** The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States

under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

**Article 28.** The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

## Appendix A

United States Department of the Interior, Fish and Wildlife Service

Reasonable and Prudent Measures and Terms and Conditions included in the U.S. Fish and Wildlife Service's Biological Opinion for the Loup River Hydroelectric Project

Filed on December 16, 2016

### REASONABLE AND PRUDENT MEASURES TO MINIMIZE INCIDENTAL TAKE AND CORRESPONDING TERMS AND CONDITIONS

The Service believes the following reasonable and prudent measures (RPMs) are necessary and appropriate to minimize impacts of incidental take of pallid sturgeon. In order to be exempt from the prohibitions of section 9 of the Act, the licensee must comply with the terms and conditions, which implement the RPMs. Reporting requirements are outlined in the following terms and conditions. These terms and conditions are non-discretionary.

RPM 1. Minimize pallid sturgeon mortalities due to Project dewatering in the Platte River Bypassed Reach (i.e., fish kills) and Project hydrocycling during high temperature events in the Lower Platte River (i.e., stranding of individuals under high stream temperatures).

#### Terms and Conditions of RPM 1

The following terms and conditions are required for the implementation of RPM 1:

1(a). The licensee will ensure all hydrocycling operations are postponed once real-time temperatures have met or exceeded 93° F (33.9° Celsius) as reported by the USGS gage and based on real-time temperature readings at the USGS Louisville stream gage (No. 06805500). The cessation of hydrocycling shall continue until the daily maximum temperature at the Louisville stream gage falls below 93° F for 72 consecutive hours (three days). The cessation of hydrocycling represents no Project diversion of water into the Loup Power Canal.

1(b): The licensee shall notify the Service of any reported fish kills in the Platte River Bypassed Reach or Lower Platte River. Contact the Service's Nebraska Field Office at (308) 382-6468.

1(c): The licensee's designated point of contact (POC) will contact the Service's POC when the RPMs and Terms and Conditions set forth in the Service's Opinion are not being met and work to remedy the situation(s). Reinitiation of consultation will occur if pallid sturgeon mortalities exceed: a) the stranding of two pallid sturgeon individuals in the Lower Platte River; or b) the death of one pallid sturgeon

individual in the Platte River Bypassed Reach as the result of a fish kill. Pallid sturgeon mortalities documented for the Lower Platte River during the period of hydrocycling cessation will not count toward incidental take totals because these mortalities would not be a result of Project operations.

RPM 2. Incidental take of pallid sturgeon will be monitored within the license period.

#### Terms and Conditions of RPM 2

2(a): The licensee shall replicate the analysis described in Objective 1 of Appendix B of the FLA. The analysis shall be conducted one out of every five years throughout the entire 30-year license period starting five years after issuance of the license. The analysis of the five year time period shall identify average annual differences in flow and water surface elevation for: a) Platte River at North Bend; and b) Platte River at Louisville. These differences shall be separated by year type (i.e., wet, normal, and dry) as described in the FLA, Appendix B.

2(b): By March 1 of the year following every fifth year of analysis under 2(a), the licensee shall submit an annual monitoring report to the Service summarizing results of monitoring under 2(a). The licensee's designated POC will contact the Service's POC when the RPMs and Terms and Conditions set forth in the Service's Opinion are not being met and work to remedy the situation(s). Reinitiation of consultation will occur if the five-year monitoring report identifies that average annual stage and discharge differences at either North Bend and/or Louisville are greater than that described under Current Operations. This term and condition is based on the Service's conclusion that the Staff Alternative's impairment to species feeding and sheltering represents a short-term, temporary effect. This short-term, temporary effect to pallid sturgeon is described in the effect section of this Opinion, and this effect is based on annual stage and discharge differences at North Bend or Louisville under the Staff Alternative. Therefore, if annual stage and discharge differences at either North Bend and/or Louisville are greater than that evaluated in this Opinion, then the effects of Project hydrocycling operations to pallid sturgeon are greater than that authorized within this incidental take section, thus triggering reinitiation of section 7 consultation.

#### VIB Amount or Extent of Take (Interior Least Tern)

Incidental take of Interior least terns will occur as a result of proposed Project operations. That take will be in the form of harm resulting from the killing of Interior least tern eggs or chicks due to hydrocycling during the 30-year license period. Project operations will result in take totaling an anticipated maximum of 104 Interior least tern eggs or chicks due to hydrocycling. Interior least tern nests usually contain 3 eggs or chicks. Annual nest loss is estimated to be 1.16 nests per year, or approximately six nests containing 3 eggs or chicks every 5 years. The Service has determined that hydrocycling operations result in take in the form of harm to Interior least terns by inundating river sandbars used by the species for breeding, which results in the death of chicks and eggs. Adult Interior least terns are excluded from the take estimate because of their ability to fly, thereby escaping the rising water.

## EFFECT OF THE TAKE

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the Interior least tern.

## REASONABLE AND PRUDENT MEASURES TO MINIMIZE INCIDENTAL TAKE, AND CORRESPONDING TERMS AND CONDITIONS

The Service believes the following RPMs are necessary and appropriate to minimize impacts of incidental take of the piping plover. In order to be exempt from the prohibitions of section 9 of the Act, the licensee must comply with the terms and conditions, which implement the reasonable and prudent measures and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

RPM 1. Ensure Project hydrocycling operations affecting interior least tern reproduction in the Lower Platte River will not result in take that exceeds 104 Interior least tern individuals over the 30 year license period.

### Terms and Conditions of RPM 1

1(a): The licensee shall replicate the analysis described in Objective 1 of Appendix B of the FLA. The analysis shall be conducted one out of five year starting five years after issuance of the license. The analysis of the five year time period shall identify average annual differences (and seasonal differences) in flow and water surface elevation for: a) Site 3; b) Site 4; c) Platte River at North Bend; d) Platte River at Leshara; e) Platte River near Ashland; and f) Platte River at Louisville. These differences shall be separated by year type (i.e., wet, normal, and dry) as described in the FLA, Appendix B.

1(b): The licensee shall develop and implement a plan that identifies and monitors the amount and frequency of inundation of Interior least tern nests specifically due to the difference in stage variation caused by hydrocycling. This plan shall be submitted to the Service for approval by March 15, 2017 (prior to the nesting season). The plan should describe the relationship between nest elevations used by nesting Interior least terns on the Lower Platte River and detail instances where daily stage variation from hydrocycling inundates nests or chicks. At a minimum, nest fate monitoring shall occur from the Project Tailrace to North Bend on the Lower Platte River. Downstream of North Bend, take resulting from hydrocycling is expected to be below estimated levels if: a) take is not exceeded upstream of North Bend; the Service's methodology used stage fluctuation at North Bend and did not account for downstream stage fluctuation; and b) average annual nesting numbers below North Bend do not substantially increase, resulting in additional inundation due to increased nest occurrence. Hydrocycling inundation is assumed to be proportionate to the number of nests/amount of nesting.

1(c): The District shall secure approval from the Service prior to modification of flows prescribed under License Articles 404, 405, and 406 under all circumstances, including those modifications for short

periods of time if required by operating emergencies that may be deemed beyond the control of the District.

1(d): The Commission will reinitiate section 7 consultation when: a) average annual stage and discharge differences at North Bend and Louisville are greater than described under Current Operations; b) average seasonal stage and discharge differences at North Bend and Louisville are greater than described under Current Operations. Values for criteria a) and b) are listed under the "Current Operations Max – Min Difference" columns in Tables 5-1 through 5-6 in the FLA, Appendix B. The Commission will reinitiate section 7 consultation if the five-year monitoring report identifies that either criterion a) or b) has been triggered.

1(e): By March 1 of the following year (after nesting), the licensee shall submit an annual report to the Service documenting all studies, monitoring or research undertaken in term and condition 1(a) and 1(b) to document incidences of Interior least tern nest inundation resulting from hydrocycling. The Commission will reinitiate consultation when estimated nest inundation resulting from hydrocycling operations exceeds 104 eggs and/or chicks. Reinitiation shall occur when within day variability in Lower Platte River streamflow exceeds that which is presently observed under Current Operations or the estimated number of nests expected to be inundated by hydrocycling is exceeded.

#### VIC     Amount or Extent of Take (Piping Plover)

Incidental take of piping plovers will occur as a result of proposed Project operations, from mortality due to hydrocycling during the 30-year license period. Project operations will result in take totaling 37 piping plover eggs or chicks due to hydrocycling. Piping plover nests usually contain 4 eggs or chicks. Annual nest loss is estimated to be 0.31 nests per year, or approximately three nests containing 4 eggs every 5 years. The Service has determined that hydrocycling operations result in take in the form of harm to piping plovers by inundating river sandbars used by the species for breeding resulting in the death of chicks and eggs. Adult piping plovers are excluded from the take estimate because of their ability to fly, thereby escaping the rising water.

#### EFFECT OF THE TAKE

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the piping plover.

#### REASONABLE AND PRUDENT MEASURES TO MINIMIZE INCIDENTAL TAKE, AND CORRESPONDING TERMS AND CONDITIONS

The Service believes the following RPMs are necessary and appropriate to minimize impacts of incidental take of the piping plover. In order to be exempt from the prohibitions of section 9 of the Act, the licensee must comply with the terms and conditions, which implement the reasonable and prudent measures and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

RPM 1. Ensure Project hydrocycling operations affecting piping plover reproduction in the Lower Platte River will not result in take that exceeds 37 piping plover individuals.

#### Terms and Conditions of RPM 1

1(a): The licensee shall replicate the analysis described in Objective 1 of Appendix B of the FLA. The analysis shall be conducted one out of five year starting five years after issuance of the license. The analysis of the five year time period shall identify average annual differences (and seasonal differences) in flow and water surface elevation for: a) Site 3; b) Site 4; c) Platte River at North Bend; d) Platte River at Leshara; e) Platte River near Ashland; and f) Platte River at Louisville. These differences shall be separated by year type (i.e., wet, normal, and dry) as described in the FLA, Appendix B.

1(b): The licensee shall develop and implement a plan that identifies and monitors the amount and frequency of inundation of piping plover nests specifically due to the difference in stage variation caused by hydrocycling. This plan shall be submitted to the Service for approval by March 1, 2016. The plan should describe the relationship between nest elevations used by nesting Interior least terns on the lower Platte River and detail instances where daily stage variation from hydrocycling inundates nests or chicks. Downstream of North Bend, take resulting from hydrocycling is expected to be below estimated levels if: a) take is not exceeded upstream of North Bend; the Service's methodology used stage fluctuation at North Bend and did not account for downstream stage fluctuation; and b) average annual nesting numbers below North Bend do not substantially increase, resulting in additional inundation due to increased nest occurrence. Hydrocycling inundation is assumed to be proportionate to the number of nests/amount of nesting.

1(c): The District shall secure approval from the Service prior to modification of flows prescribed under Articles 404, 405, and 406 under all circumstances, including those modifications for short periods of time if required by operating emergencies that may be deemed beyond the control of the District.

1(d): The Commission will reinitiate section 7 consultation when a) average annual stage and discharge differences at North Bend and Louisville are greater than described under Current Operations; b) average seasonal stage and discharge differences at North Bend and Louisville are greater than described under Current Operations; Values for criteria a) and b) are listed under the "Current Operations Max – Min Difference" columns in Tables 5-1 through 5-6 in the FLA, Appendix B. The Commission will reinitiate section 7 consultation if the five-year monitoring report identifies that either criterion a) or b) has been triggered.

1(e): By March 1 of the following year (after nesting), The licensee shall submit an annual report to the Service documenting all studies, monitoring or research undertaken in term and condition 1(a) and 1(b) to document incidences of Interior least tern nest inundation resulting from hydrocycling by March 1 following a nesting season. The Commission will reinitiate consultation when estimated nest inundation resulting from hydrocycling operations exceeds 72 eggs and/or chicks. Reinitiation shall occur when within day variability in Lower Platte River streamflow exceed that which is presently observed under

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Current Operations or the estimated number of nests expected to be inundated by hydrocycling is exceeded.

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