The Central Nebraska Pubic Power and Irrigation District
Don Kraus, General Manager

Federal Energy Regulatory Commission Project No. 1417

Recertification Application to the Low Impact Hydropower Institute for LIHI Certificate Number 37

Prepared by

The Central Nebraska Pubic Power and Irrigation District

June 29, 2018

The Central Nebraska Pubic Power and Irrigation District

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NOTE: For the numerous supporting documents, see the "LIHI 2018 Recertification Application – IX Supporting Information" folder that is separate from the "LIHI 2018 Recertification Application (except IX Supporting Information)" file. They are on the same USB flash drive.

NOTE: For a detailed listing of the *IX Supporting Information* folder's subfolders and the individual files located in each subfolder, go to section IX at the end of this document.

INTRODUCTION

This is an application to the Low Impact Hydropower Institute (LIHI) for recertification of the Kingsley Dam Project (LIHI Certificate Number 37), subsequent to a previous LIHI certification that expired May 22, 2018. There have been no material changes in the facility design or operation since the most recent LIHI review that was concluded in May 2013. (See section IX. Supporting Information for the LIHI reviewer's report by Gary M. Franc, dated 9/18/2013.) There also have been no material changes in the environmental conditions in the project vicinity since that most recent LIHI review. The only material changes that have occurred recently are in the revised LIHI certification criteria described in the 2016 version of LIHI's certification handbook.

I. KINGSLEY HYDRO

I.1 Facility Description for Kingsley Hydro Plant

The Kingsley Dam Project, Federal Energy Regulatory Commission (FERC) Project No. 1417 (Project), consists of four hydroelectric power plants. Three of the plants were constructed at the time the Kingsley Dam was constructed in 1941 with a fourth plant, the Kingsley Hydro Plant, added in 1984. The Project was originally licensed by FERC in 1937 and was relicensed in 1998.

A unique condition within the Settlement Agreement for the 1998 FERC license is the Environmental Account, a block of water set aside in Lake McConaughy dedicated for fish and wildlife purposes. This Environmental Account is funded by 10 percent of the storable inflows into Lake McConaughy with a cap of 200,000 acre-feet of water. The U.S. Fish and Wildlife Service (Service or FWS) employs a manager who controls the release of this water for the protection of endangered and threatened species on the Platte River downstream.

The Kingsley Dam Project consists of four dams and/or diversions, four larger impoundments and a smaller diversion pool with eight identified Zone of Effects (Zone or ZOE).

Kingsley Dam itself is located in Keith County, Nebraska near the town of Ogallala. This is a 3.1 mile, 163' tall earthen filled dam that crosses the North Platte River. Water stored upstream of the Dam forms Lake McConaughy, the largest lake in the State of Nebraska, covering 30,500 surface acres.

The Dam and Lake are owned and operated by The Central Nebraska Public Power and Irrigation District (Central or CNPPID) and water is stored there for use in both Central's system and for other Irrigation and Power Districts' use.

The Dam creates an upstream Zone of Effect (Lake McConaughy) and a downstream Zone of Effect; Lake Ogallala (Figure #1). Lake Ogallala, which is owned and operated by Central and the Nebraska Public Power District (NPPD), was created when fill material for use in the construction of the Dam was excavated from the riverbed and surrounding shoreline downstream of the placement of the Dam. At the lower end of Lake Ogallala, a pre-existing diversion, the Keystone Diversion Dam, backs the water released from Lake McConaughy up to form Lake Ogallala. The Keystone Diversion Dam is owned and operated by NPPD.

Water is released from Lake McConaughy through the Kingsley Hydro Plant (Kingsley Hydro). The water either travels through the turbine and exits through the tailrace or the water is diverted around the turbine through a bypass tube that spills the water out of the plant above the tailrace.

Water can then leave Lake Ogallala through the North Platte River gates or NPPD diverts it into the Keystone Canal. If diverted, the water moves down the Keystone Canal to Southerland Reservoir where it is used as cooling water for a fossil fuel plant owned and operated by NPPD. From Sutherland Reservoir the water goes to Lake Maloney, a regulating reservoir for NPPD's North Platte Hydro. After passing through the hydro the water is returned to the South Platte River just three miles above the confluence of the South Platte and North Platte Rivers. This is 56 River miles downstream of Lake Ogallala.

Water released from Lake Ogallala into the North Platte River which flows southeast to the confluence with the South Platte River. Along the way there are four independent irrigation companies with diversions on the North Platte River to divert both natural flow and storage water into irrigation projects not owned or operated by Central.

Table I-1. Information Required for the Project Description – Kingsley Hydro Plant

Information Type	*Variable Description*	*Response (and reference to further details)*
Name of the Facility	Kingsley Hydro Plant, FERC Project # 1417	
Location	North Platte River	
	North Platte	
	Ogallala, Keith County, Nebraska	
	Kingsley Dam is located on River Mile 57.3 of the North Platte River	
	41* 13' 25"	
	101* 40' 21"	
Facility Owner	Don Kraus, General Manager	
	The Central Nebraska Public Power and Irrigation District (Central)	
	Representative in LIHI certification: Eric Hixson, Engineering Services Manager.	
	FERC Project Number 1417 (Kingsley Dam Project), License issued July 29, 1998 and expires on June 30, 2038	
Regulatory Status	Major FERC License	
	Water Quality Certificate identifier and issuance date, plus source agency name: Section 401 State Water Quality Certification issued August 30, 1988 by the Nebraska Department of Environmental Control (now the Department of Environmental Quality)	
	See section IX. Supporting Information for supporting documents referenced in this application	
	Initial Operations: 1984	
Power Plant Characteristics	50 MW	
	Average annual generation (MWh): 82,212 over life of the plant. The last ten years = 88,050	
	A single 51,900-kW turbine and one 59,470-kW generator with an installed capacity of 51,900-kW Maximum hydraulic capacity: 4,979 cfs. Minimum hydraulic capacity: 0 cfs	

	For Peaking and Seasonal Storage	
	Kingsley Dam was constructed in 1941 and Kingsley Hydro was constructed in 1984	
	163 foot high hydraulic earthfill dam and dike	
	A 5,720 cfs capacity outlet tower, a 54,000 cfs gated morning glory spillway and a 475-footwide, 50,000 cfs capacity emergency spillway	
	Tailwater elevation of Lake Ogallala 3123.5 MSL – 3126.3 MSL	
Characteristics of Dam, Diversion, or Conduit	A 685-foot-long reinforced concrete penstock	
	Dates and types of major, generation-related infrastructure improvements: None since 2013.	
	Facility purposes: Power and water supply for irrigation and wildlife	
	North Platte River	
	Kingsley Hydroelectric Plant	
	Lake McConaughy a 30,500 Surface Acre Reservoir with a maximal allowable storage capacity of 1,790,000 acre-feet	
	Maximum water surface elevation 3260 MSL to 3265 MSL depending on the time of year	
	Downstream Dam: Keystone Diversion Dam owned by the Nebraska Public Power District FERC #1835: River Mile 55.7 North Platte River	
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation: None	
Characteristics of Reservoir and Watershed	Area inside FERC project boundary: 36,249 Ac	
	Average annual flow at the dam: 835,113 acre/feet	
	Average monthly flows: 69,592 acre/feet	
	Location and name of relevant stream gauging stations above and below the facility: Above: North Platte River at Lewellen gauge station #6687500. Below: North Platte River near Keystone gauge station #6690500	
	Watershed area at the dam: 3,741,283 Ac.	
	Dam impounds water upstream in Lake McConaughy	
	Upstream and downstream locations by river miles – 80.5 (Lake McConaughy inlet) to 54.2 (Keystone Diversion Dam)	
Hydrologic Setting	Designated uses of Lake McConaughy by the Nebraska Department of Environmental Quality are, aquatic life, recreation, agriculture water supply, industrial water supply, and aesthetics. Designated uses of Lake Ogallala are aquatic life, recreation, and agriculture.	

	See section VII. Contacts for the contact information for the local, state, and federal resource agencies	
	See section VII. Contacts for the contact information for the local non-governmental stakeholders	
	Photographs of key features of the facility and each of the designated zones of effect: See Figures 5,7,8, and 10	
Designated Zones of Effect	Maps, aerial photos, and/or plan view diagrams of facility area and river basin: See Figures 4, 6, and 9	
	The Kingsley Hydro Plant has two Zones of Effect. The upstream zone consists of Lake McConaughy the storage reservoir on the North Platte River created by Kingsley Dam. The Lake is 30,000 surface acres in size and stretches approximately 16.4 miles upstream from the structure. The delimiting structures of the Zone of Effect are the mouth of the North Platte River and the Kingsley Dam. The second Zone of Effect is the downstream zone which consists of Lake Ogallala. This is a lake formed by the removal of the material making up Kingsley Dam. Located 1.5 miles downriver from the Dam closing off the downstream portion of Lake Ogallala is the Keystone Diversion Dam, a structure owned and operated by the Nebraska Public Power District. The delimiting structures of the Zone of Effect are Kingsley Dam and the Keystone Diversion Dam.	
Photographs and Maps	See Figure #1 and Figure #4: Zones of Effect #1 and #2 upstream and downstream of Kingsley Dam See Figure #5: The Kingsley Hydro See Figure #6: Upstream delimitation for Zone of Effect #1. The Mouth of the North Platte River as it enters Lake McConaughy. See Figure #7: Kingsley Dam forming Lake McConaughy the downstream delimitation for Zone of Impact #1 and the upstream delimitation for Zone of Impact #2. See Figure #8: The Keystone Diversion Dam the downstream delimitation for Zone of Effect #2. Owned and operated by the Nebraska Public Power District.	

I.2 Standards Matrices for Kingsley Hydro

There are two designated zone of effects for this facility. The upstream Zone of Effect (Zone of Effect #1) is the mouth of the North Platte River as it brings water into Lake McConaughy, located approximately 16 miles upstream from Kingsley Dam. Kingsley Dam then acts as both the downstream boundary of the Zone of Effect #1 and the upstream boundary of the downstream Zone of Effect (Zone of Effect #2). The downstream boundary of the Zone of Effect #2 is the Keystone Diversion Dam located approximately 1.5 miles below Kingsley Dam. The standards selected to satisfy the LIHI certification criteria for these two zones are identified in the following tables.

I.2.UZ.1 Matrix of Alternative Standards – Upstream Zone

Table I-2. Facility Name: Kingsley Hydro Plant
Zone of Effect: #1 Lake McConaughy

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**		***X***			
E	**Watershed and Shoreline Protection**		***X***			
F	**Threatened and Endangered Species Protection**			***X***		
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			***X***

Applicants must complete a Standards Matrix for each designated zone of effect; shaded cells indicate no such standard is available for that criterion.

SUPPORTING INFORMATION

This section contains information that explains and justifies the standards selected to pass the LIHI certification criteria**.**

I.2.UZ.2 Ecological Flows Standards for Zone #1 Lake McConaughy

The facility satisfies Standard A-1, Not Applicable/De Minimis Effect, in Zone 1.

Information Required to Support Ecological Flows Standards

Criterion	*Standard*	*Instructions*
A	*1*	*Not Applicable / De Minimis Effect:* • *Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.* • *If Run-of-River operation, provide details on how flows, water levels, and operation is monitored to ensure such an operational mode is maintained.* • *In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.* • *For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – **NOTE:** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.*

• *Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.*

See Figure #9: Kingsley Dam with the Kingsley Hydro located on the south end of the dam. Lake McConaughy is upstream and Lake Ogallala downstream. Water can only travel from one impoundment to the next by passing through the Hydro Plant's turbines or through the bypass tube within the Hydro Plant that takes water around the turbine. High flows exceeding the capacity of the Hydro Plant may be passed through the Morning Glory spillway and flood flows can pass over a 475-footwide, 50,000 cfs capacity emergency spillway.

- *If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.*
    - Not Applicable – not a Run-of-River operation
- *In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.*
    - Not Applicable – not a conduit project
- *For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed. All impoundment zones can apply Criterion A-1 to pass this criterion.*

The Facility is in compliance with all Resource Agency Recommendations regarding flow conditions for fish and wildlife protection, mitigation, and enhancement.

Water enters into Lake McConaughy from the North Platte River. Central has annual storage rights for that water from October 1 - May 1. Central may store water at other times of the year if senior natural flow rights downriver are not called for. Water is released from Lake McConaughy for one of three reasons. The first is for the production of electrical power through both the Kingsley Hydro and the three Supply Canal Hydro Plants downriver owned and operated by Central as well as for the North Platte Hydro owned and operated by the Nebraska Public Power District (NPPD). Water stored in Lake McConaughy is also utilized as cooling water by NPPD's Gerald Gentlemen Station, a fossil fuel electrical generation plant. The second use of the water is for irrigation. Approximately 250,000 acres are irrigated annually from waters stored in Lake McConaughy. Irrigation releases typically begin in June and run through August. The third use of water stored in Lake McConaughy is through the Environmental Account, a block of water provided by Central to the U.S. Fish and Wildlife Service for use for fish and wildlife downstream. The fish community within Lake McConaughy is monitored on an annual basis by the Nebraska Game and Parks Commission's Fishery Division.

Supporting Documentation: ***[All supporting documents are in the section IX folder.]***

FERC 1998 License for Central (see Articles 400, 403, 404, 405, 408, 410, and 412)
Environmental Account (see Exhibit X of the FERC 1998 License)
2018 Environmental Account Operating Plan

I.2.UZ.3 Water Quality Standards for Zone #1 Lake McConaughy

The facility satisfies Standard B-2, Agency Recommendations, in Zone 1.

Information Required to Support Water Quality Standards

Criterion	*Standard*	*Instructions*	
B		*2*	*Agency Recommendation:* • *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.* • *Provide a copy of the most recent Water Quality Certificate, including the date of issuance.* • *Identify any other agency recommendations related to water quality and explain their scientific or technical basis.* • *Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.*

- *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.*

According to the 2018 Water Quality Integrated Report by the Nebraska Department of Environmental Quality, Water Quality Division the North Platte River is not a Water Quality

Limited river reach and is placed in Category 1, i.e. a waterbody where all designated uses are met (http//deq.ne.gov Draft 2018 Water Quality Integrated Report Page NP-8).

- *Provide a copy of the most recent Water Quality Certificate, including the date of issuance.*

According to the Nebraska Department of Environmental Quality Lake McConaughy's water quality supports beneficial use for recreation, agriculture water supply, industrial water supply, and aesthetics. This waterbody is listed as category 5 in the 2018 Report. (2018 Water Quality Integrated Report Page NP-3)

Category 5 – Waterbody where one or more beneficial uses are determined to be impaired by one or more pollutants and all of the TMDLs have not been developed.

Category 5 waters constitute the Section 303(d) list subject to EPA approval/disapproval.

Lake McConaughy's aquatic life use was impaired for Total Phosphorus, Chlorophyll a, Hazard Index Compounds and Mercury. Data gathered in 2014 determined this waterbody's aquatic life use is supported for Total Phosphorus. The impairment of the waters is not caused by actions of the facility. The facility is in compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility on August 30, 1988.

- *Identify any other agency recommendations related to water quality and explain their scientific or technical basis.*

Not Applicable: There are no other agency recommendations related to water quality.

- *Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations*

Not Applicable: There are no compliance activities in regard to monitoring Lake McConaughy.

Supporting Documentation

NDEQ 2018 Water Quality Integrated Report Draft
NDEQ Letter by Marty Link

I.2.UZ.4 Upstream Fish Passage Standards for Zone #1 Lake McConaughy

The facility satisfies Standard C-1, Not Applicable/De Minimis Effect, in Zone 1.

Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	*1*	*Not Applicable / De Minimis Effect:* • • *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).* • • *For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.* • • *Document available fish distribution data and the lack of migratory fish species in the vicinity.* • • *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

• *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).*

In Zone of Effect #1 there is no impediment for the fish to move upstream from the Zone into the North Platte River, thus the Facility is in compliance with all Fish Passage Prescription for upstream passage of anadromous and catadromous fish.

• *For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.*

There is nothing to stop fish from moving from Zone of Effect #1 upstream in the North Platte River.

• *Document available fish distribution data and the lack of migratory fish species in the vicinity.*

The Nebraska Game and Parks Commission (NGPC) manages the fish community of Lake McConaughy and regularly monitors the population status of game and forage species. See the Fish Diversity Spreadsheet in section IX. Supporting Information for a list of species present in Lake McConaughy.

• *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

No migratory species have been extirpated from this zone.

Supporting Documentation:

NGPC Letter by Dave Tunink
Fish Diversity Spreadsheet

I.2.UZ.5 Downstream Fish Passage Standards for Zone #1 Lake McConaughy

The facility satisfies Standard D-2, Agency Recommendations, in Zone 1.

Information Required to Support Downstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
D	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

Fish are restricted from moving downstream from Lake McConaughy to Lake Ogallala by Kingsley Dam and the Kingsley Hydro Plant. However, a large percentage of the fish community in both Lake McConaughy and Lake Ogallala are introduced, non-native sport fish and the lack of movement from Lake McConaughy to Lake Ogallala does not limit the completion of their lifecycle for any native fish in Lake McConaughy. In addition, due to the nature of Lake Ogallala being managed as a Cold Water put and take fishery for trout, movement of fish from Lake McConaughy is unwanted and what movement that does occur decays the value of the Lake Ogallala fishery.

There has never been a concern by the NGPC about downstream movement of fish from Lake McConaughy. See the letter from Dave Tunink of the Nebraska Game and Parks Commission.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

There are no agency recommendations about fish movement through the Kingsley Hydro.

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

There are no provisions for fish passage monitoring.

Supporting Documentation:

NGPC Letter by Dave Tunink
Fish Diversity Spreadsheet

I.2.UZ.6 Shoreline and Watershed Protection Standards for Zone #1 Lake McConaughy

The facility satisfies Standard E-2, Agency Recommendations, in Zone 1.

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

- Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).

Central, in conjunction with the U.S. Fish and Wildlife Service, Nebraska Game and Parks Commission on other stakeholders has a FERC approved revised Shoreline Management Plan. (April 11, 2014 Order Modifying and Approving Revised Land and Shoreline Management Plan)

- Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

There have been no findings of non-compliance with the Land and Shoreline Management Plan by FERC since the previous recertification in 2013.

Supporting Documentation:

Land and Shoreline Management Plan
NGPC Lake McConaughy Recreation Area Lease Agreement
NGPC Master Plan for Lake McConaughy and Lake Ogallala

I.2.UZ.7 Threatened and Endangered Species Standards for Zone #1 Lake McConaughy.

The facility satisfies Standard F-3, Enforceable Protection, in Zone 1.

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	3	Recovery Planning and Action: • If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents. • Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

- If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents.

The Interior least tern (*Sternula antillarum athalassos*) is a federal and state listed endangered species that nests at the lake along with the northern great plain piping plover (*Charadrius melodus*), a federal and state listed threatened species. Both nest on the sandy shores of Lake McConaughy. Central annually, in consultation with the U.S. Fish and Wildlife Service and Nebraska Game and Parks Commission, and under the specifications of our approved Land and Shoreline Management Plan develop a management plan to protect nesting terns and plovers along the shore of Lake McConaughy ("Management Plan for the Least Tern and Piping Plover Nesting on the Shores of Lake McConaughy"). In addition, the Nebraska Game and Parks Commission, who leases the entire shore of the Lake for recreational purposes, published the Lake McConaughy Lake Ogallala Master Plan on 10/21/2016 (NGPC Master Plan for Lake McConaughy and Lake Ogallala) which supports the work of Central's Management plan with additional educational activities and larger areas where recreation is restricted during the nesting season.

The river otter (Lontra Canadensis) is a State Listed threatened species that was reintroduced along the North Platte River upstream of Lake McConaughy. The species is doing well and expanding its range in Nebraska both upstream and downstream of Lake McConaughy. According to the Nebraska Game and Parks Commission, "River otter

populations have expanded since their reintroduction. High survival rates and the adaptability of this species have contributed to their success.

With continued protection and habitat conservation, the river otter is likely to make a full recovery in Nebraska." http://rarespecies.nebraska.gov/portfolio/river-otter/

There are no agency recommendations pursuant to River Otters at Lake McConaughy.

- Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

Incidental take and the biological opinion covering the management of least tern and piping plovers at Lake McConaughy are expressed in Central Nebraska Public Power and Irrigation Districts 40-Year FERC License which runs to June 30, 2038.

Supporting Documentation:

Land and Shoreline Management Plan – Appendix C
(March 9, 2010 Management Plan for Least Tern and Piping Plover Nesting on the Shore of Lake McConaughy)
Three-Year Endangered Species Reevaluation Report for Period Ending 2017
Tern and Plover Nest Monitoring Annual Report for 2017
NGPC Master Plan for Lake McConaughy and Lake Ogallala

I.2.UZ.8 Cultural and Historic Resources Standards for Zone #1 Lake McConaughy

This facility satisfies Standard G-2. Approved Plan

Information Required to Support Cultural and Historic Resources Standards

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

Central Nebraska Public Power and Irrigation District has a FERC approved Cultural Resource Management Plan.

- Document that the facility is in compliance with all such plans.

Supporting Documentation:

Cultural Resources Management Plan

I.2.UZ.9 Recreational Resources Standards for Zone #1 Lake McConaughy

The facility satisfies Standard H-2 Agency Recommendation

Information Required to Support Recreational Resources Standards

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.

Recreational access and/or accommodations are outlined in the approved Land and Shoreline Management Plan and for Zone of Effect #1, in the Nebraska Game and Parks Commission's Master Plan for Lake McConaughy and Lake Ogallala.

- Document that the facility is in compliance with all such recommendations and plans.

Supporting Documentation:

Land and Shoreline Management Plan
NGPC Master Plan for Lake McConaughy and Lake Ogallala
NGPC Recreational Lease
Form 80 Recreational Reports for 2014
Public Education Activities Annual Report

H	PLUS	Bonus Activities: • Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails). • Document that such new recreational opportunities did not create unmitigated impacts to other resources.

I.2.DZ.1 Matrix of Alternative Standards – Downstream Zone:

Table I-3. Facility Name: Kingsley Hydro Plant
Zone of Effect: #2 Lake Ogallala

	Criterion	*Alternative Standards*				
		1	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**	***X***				
F	**Threatened and Endangered Species Protection**	***X***				
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			***X***

Applicants must complete a Standards Matrix for each designated zone of effect; shaded cells indicate no such standard is available for that criterion.

SUPPORTING INFORMATION

This section contains information that explains and justifies the standards selected to pass the LIHI certification criteria.

I.2.DZ.2 Ecological Flows Standards for Zone #2 Lake Ogallala

The facility satisfies Standard A-1, Not Applicable/De Minimis Effect, in Zone 2.

Information Required to Support Ecological Flows Standards

Criterion	***Standard***	***Instructions***
A	*1*	*Not Applicable / De Minimis Effect:* • *Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.* • *If Run-of-River operation, provide details on how flows, water levels, and operation is monitored to ensure such an operational mode is maintained.* • *In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.* • *For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – **NOTE:** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.*

• *Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.*

See Figure #9: The Google Earth Image taken 9/3/2014 shows Kingsley Dam with the Kingsley Hydro located on the south end of the dam. Lake McConaughy is upstream and Lake Ogallala downstream. Water can only enter Zone of Effect #2 by passing through either the Hydro Plant's turbine or its bypass valve. Water can leave the Zone of Effect #2 either through the river gates, passing over the ogee, or passage into the Nebraska Public Power District's Keystone Canal.

See Figure #10: Keystone Diversion Dam at the lower end of Zone of Effect #2. Three river gates are located in the middle of the dam with four additional gates on the south end of the dam. Adjacent to the south river gates are the gates to the Keystone Canal.

- *If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.*

Not Applicable – not a Run-of-River operation

- *In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.*

Not Applicable – not a conduit project

- *For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed. All impoundment zones can apply Criterion A-1 to pass this criterion.*

Lake Ogallala is an impoundment created by the Keystone Diversion, a structure owned and operated by the Nebraska Public Power District. Because water released from Lake McConaughy comes from the bottom of the lake, the impounded water is cold and as such the Nebraska Game and Parks Commission has develop a put-and-take trout fishery in the Lake. Managed by, with annual monitoring by the Nebraska Game and Parks Commission's Fishery Division.

I.2.DZ.3 Water Quality Standards for Zone #2 Lake Ogallala

The facility satisfies Standard B-2, Agency Recommendations, in Zone 2.

Information Required to Support Water Quality Standards
Lake Ogallala

Criterion	*Standard*	*Instructions*
B	*2*	*Agency Recommendation:* • *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.* • *Provide a copy of the most recent Water Quality Certificate, including the date of issuance.* • *Identify any other agency recommendations related to water quality and explain their scientific or technical basis.* • *Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.*

• *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.*

Lake Ogallala has been listed on the 303(d) list of impaired waters for low dissolved oxygen (D.O.). Central, along with NPPD, NGPC, University of Nebraska-Lincoln, and the Nebraska Department of Environmental Quality conducted studies to determine the Total Maximum Daily Load and determine the cause of the low D.O. The cause was determined to be pollution entering the lake from upstream waters and not caused by the Facility.

Central and the other entities developed a two-part plan to address the low D.O. concerns in Lake Ogallala. The studies discussed earlier identified areas in the lake where lack of circulation of lake water contributed to the low D.O. in those areas and subsequent stress on the trout fishery of the lake. In 2009, a channel was cut through a peninsula and through shallow areas of the lake to improve circulation.

- The facility is in compliance with all water quality conditions contained in a science-based agency recommendation**.** Such recommendations were developed through a site-specific multi-stakeholder study and considers all water quality components necessary to preserve healthy fish and wildlife populations, human uses and recreation.

As noted above, the Facility is in compliance will all water quality conditions based upon agency recommendations. These recommendations were developed through a site-specific multi-stakeholder study. The Lake Ogallala Management Plan (NDEQ 2007 Total Maximum Daily Load for Lake Ogallala) and the most recent Lake Ogallala Water Quality Report is included in the Supporting Documentation

- *Provide a copy of the most recent Water Quality Certificate, including the date of issuance.*

See Supporting Documents.

- *Identify any other agency recommendations related to water quality and explain their scientific or technical basis.*

  Not Applicable: There are no other agency recommendations related to water quality.

- D*escribe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations*

Central maintains a minimum D.O. level at the end of its tailrace by bypassing the turbine of the Kingsley Hydroelectric power plant and spraying the water into the air through a bypass valve. The amount of water passed through the bypass is determined by instantaneous monitoring of D.O. at the end of the tailrace.

In addition, Central monitors D.O. and temperature at one-meter intervals at five separate stations around the lake on a weekly basis to assure adequate D.O.

Supporting Documentation:

NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ 2018 Water Quality Integrated Report Draft
NDEQ 2007 Total Maximum Daily Load for Lake Ogallala
Water Quality Modeling of Lake Ogallala Using CE-QUAL-W2 Model to Support Dissolved Oxygen TMDL Determination (Lake Ogallala Water Quality Modeling to Support DO TMDL Determination 2004)
Lake Ogallala Bathometric Project Mitigation Report 2015
Lake Ogallala Water Quality Report 2013

I.2.DZ.4 Upstream Fish Passage Standards for Zone #2 Lake Ogallala

The facility satisfies Standard C-1, Not Applicable/De Minimis Effect, in Zone 2.

Information Required to Support Upstream Fish Passage Standards

Criterion	***Standard***	***Instructions***
C	*1*	*Not Applicable / De Minimis Effect:* • *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).* • *For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.*

		• *Document available fish distribution data and the lack of migratory fish species in the vicinity.* • *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

• *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).*

Lake Ogallala was treated with rotenone (a chemical that interferes with the ability of fish to utilize oxygen) in 2009 to remove all fish from the Lake. In 2010 the Lake was restocked with rainbow trout and yellow perch. The Lake is considered to be a put-and-take lake with no natural reproduction of the selected species expected. Any other fish found in the lake, i.e. rough fish like carp and white sucker or game fish like catfish have come into the lake by successfully passing through the turbine of the Kingsley Hydro.

The 2009 renovation was the last in a series of renovations and it has been expressed that to maintain the quality of the trout fishery renovation is required on a ten-year basis. This is a decision by the Nebraska Game and Parks Commission.

• *For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.*

Not applicable given that a) this is an impoundment, and b) riverine fish are restricted from entering Lake Ogallala by NPPD's Keystone Diversion and following renovation are not introduced artificially into the Lake.

• *Document available fish distribution data and the lack of migratory fish species in the vicinity.*

The Nebraska Game and Parks Commission manages the fish community of Lake Ogallala and regularly stocks the Lake with trout and other game fish. Commission biologists regularly monitor the population status of the fish in the lake.

• *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

Again, this is a managed fishery in which all fish species except those selected for the fishery are removed on a regular basis after which the lake is restocked with non-native rainbow trout and yellow perch.

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

I.2.DZ.5 Downstream Fish Passage Standards for Zone #2 Lake Ogallala

The facility satisfies Standard D-1, Non Applicable/De Minimis Effect, in Zone 2.

Information Required to Support Downstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
D	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

- Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).

The delimitating structure for Zone of Effect #2 is the Keystone Diversion Dam owned by the Nebraska Public Power District. Fish can pass through the river gates and the canal gates as well as over the ogee. Trout stocked in the lake are regularly caught in three rock-weir pools below the dam and miles downstream in the Keystone Canal.

- For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.

Not Applicable

- Document available fish distribution data and the lack of migratory fish species in the vicinity.

Not Applicable

- If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

Not Applicable

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

I.2.DZ.6 Shoreline and Watershed Protection Standards for Zone #2 Lake Ogallala

The facility satisfies Standard E-2, Agency Recommendations, in Zone 2.

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

- Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).

The shore of Lake Ogallala is protected under Central's Land and Shoreline Management Plan and the Nebraska Game and Parks Commission's Mater Plan for Lake McConaughy and Lake Ogallala.

- Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect. If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).

Once again, all Central owned property along the lakes and canal system are managed through the Land and Shoreline Management Plan. Central leases the shoreline of Lake Ogallala to the Nebraska Game and Parks Commission and their management of the lands is governed not only by Central's LSMP, but also by the NGPC Master Plan for Lake McConaughy and Lake Ogallala.

Supporting Documentation:

Land and Shoreline Management Plan
NGPC Recreational Lease
NGPC Master Plan for Lake McConaughy and Lake Ogallala

I.2.DZ.7 Threatened and Endangered Species Standards for Zone #2 Lake Ogallala

The facility satisfies Standard F-3, Enforceable Protection, in Zone 2.

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	3	Recovery Planning and Action: • If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents. • Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

- If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents.

There are no known federally endangered or threatened species that utilize the downstream Zone of Effect on a regular basis. Whooping cranes have been reported from the shore of the lake with the last sighting in 2011. If present, any endangered species is protected by Central's Land and Shoreline Management plan.

The river otter (Lontra Canadensis) is a State Listed threatened species that was reintroduced along the North Platte River upstream of Lake McConaughy. The species is doing well and expanding its range in Nebraska both upstream and downstream of Lake McConaughy. According to the Nebraska Game and Parks Commission, "River otter populations have expanded since their reintroduction. High survival rates and the adaptability of this species have contributed to their success.

With continued protection and habitat conservation, the river otter is likely to make a full recovery in Nebraska." http://rarespecies.nebraska.gov/portfolio/river-otter/

There are no agency recommendations pursuant to River Otters at Lake Ogallala.

- Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

All incidental take permits and/or biological opinions connected with federally listed species are pursuant to Lake McConaughy and there are no permits nor opinions regarding Lake Ogallala.

Supporting Documentation

Tern and Plover Nest Monitoring Annual Report for 2017

I.2.DZ.8 Cultural and Historic Resources Standards for Zone #2 Lake Ogallala

This facility satisfies Standard G-2. Approved Plan

Information Required to Support Cultural and Historic Resources Standards

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

Central has a FERC-approved Cultural Resource Management Plan.

- Document that the facility is in compliance with all such plans.

Supporting Documentation

Cultural Resources Management Plan

I.2.DZ.9 Recreational Resources Standards for Zone #2 Lake Ogallala

The facility satisfies Standard H-2 Agency Recommendation

Information Required to Support Recreational Resources Standards

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.

Recreational access and/or accommodations are outlined in the approved Land and Shoreline Management Plan and for Zone of Effect #2, in the Nebraska Game and Parks Commission's Master Plan for Lake McConaughy and Lake Ogallala.

- Document that the facility is in compliance with all such recommendations and plans.

The most recent six-year FERC Form 80 Recreation Reports are for the calendar year 2014 and are provided in section IX.

Supporting Documentation:

NGPC Recreational Lease
NGPC Master Plan for Lake McConaughy and Lake Ogallala
Form 80 Recreational Reports for 2014
Public Education Activities Annual Report

Criterion	***Standard***	***Instructions***
H	PLUS	Bonus Activities: • Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails). • Document that such new recreational opportunities did not create unmitigated impacts to other resources.

- Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails).

Central owns and operates a facility specifically designed for bald eagle viewing. The facility is open from approximately December 23rd – February 28 every year. The facility is open weekends and special viewings may be scheduled for groups or photographers throughout the week.

The Kingsley Eagle Viewing Building, a freestanding frame structure constructed in 1996 to facilitate wildlife viewing and public education, 1,476 people signed the guest book during the 2017-18 viewing season. Visitors who attended the Kingsley facility this year came from 15 different states, and one visitor was from Belgium. The facility was open on 24 days between December 23, 2017 and February 25, 2018. Groups hosted at the facility this year included a community college class, one high school class and three elementary school classes. Again this year, the Nebraska Game and Parks Commission provided a Park Naturalist to give presentations on bald eagles every weekend through the month of January 2018 at Central's Kingsley Eagle Viewing Facility.

Eagle numbers at the Kingsley facility were lower this year, with a total of 933 eagles sighted, which averaged to 38 eagles per day.

Document that such new recreational opportunities did not create unmitigated impacts to other resources.

The Viewing Season is at a time when very few other recreational activities are occurring. There is no documentation of that, but mid-winter in Nebraska is not camping, boating, or beach recreation weather.

Supporting Document:

Public Education Activities Annual Report (4-18-2018)

II. CENTRAL DIVERSION DAM

II.1 Facility Description for Central Diversion Dam

Two thousand feet (2,000') downstream of the confluence of the South Platte and North Platte Rivers is Central's Diversion Dam (Figures #2 & #11). The Central Diversion Dam is 874 feet long and stretches completely across the Platte River. It contains two sets of radial gates to allow water to flow through the dam into the Platte River below the diversion and an ogee to allow excess water to overflow the dam.

The dam backs the water from both rivers up to form a 24.64-acre pond that reaches from the dam back 2,000 feet to the confluence.

At the Central Diversion Dam, the water may be diverted into a 75-mile long bypass canal (the Supply Canal). Water may also be released downriver through a north set of river gates and a south set of river gates. During the storage season (October 1 – May 1) little or no water is passed through the diversion unless there is an excess supply of water in the two rivers or in response to a request from the U.S. Fish and Wildlife Service to utilize water from the Environmental Account for in stream flow use.

During the irrigation season (typically June – September) natural flow water (water flowing in the river, not water stored in Lake McConaughy) is allowed to pass through the Diversion to provide water to downstream water right holders. At that time only storage water released from Lake McConaughy is diverted into the canal.

The two Zone of Effects (Zone or ZOE) for the Central Diversion Dam are the Diversion Pond upstream and 21.3 miles of the Platte River downstream of the diversion and upstream of the Gothenburg Diversion owned and operated by NPPD (Figure #2).

Table II-1. Information Required for the Project Description – Central Diversion Dam

Information Type	***Variable Description***	***Response (and reference to further details)***
Name of the Facility	Central Diversion Dam	
Location	Platte River	
	Platte River Basin	
	North Platte, Lincoln County, Nebraska	
	Platte River mile 310.5	
	40* 06" 50"" North Latitude	
	100* 40' 33" West Longitude	

Facility Owner	Don Kraus, General Manager	
	The Central Nebraska Public Power and Irrigation District	
	Representative in LIHI certification: Eric Hixson, Engineering Services Manager.	
	FERC Project Number 1417 (Kingsley Dam Project), License issued July 29, 1998 and expires on June 30, 2038	
Regulatory Status	FERC license type: Major	
	Water Quality Certificate identifier and issuance date, plus source agency name: Section 401 State Water Quality Certification issued August 30, 1988 by the Nebraska Department of Environmental Control (now the Department of Environmental Quality)	
	See section IX. Supporting Information for supporting documents referenced in this application	
	Initial Operations: 1941	
Characteristics of Dam, Diversion, or Conduit	342-foot-long radial gate section, a 371-foot-long reinforced concrete ogee, a 161-foot-long radial gate section, a 3,738-foot-long north dike, a 10,700-foot-long south dike, and appurtenant facilities Upstream Dam: Keystone Diversion Dam owned by the Nebraska Public Power District; FERC #1835. River Mile 55.7 North Platte River	
	Downstream Dam: Gothenburg Canal Company Diversion owned by the Nebraska Public Power District. River Mile 289.2 Platte River	
	Area inside FERC project boundary: 115 Ac.	
	Average annual flow at the dam: 857,385 Acre-feet + what passes through the dam	
	Average monthly flows: 71,449 Acre-feet + what passes through the dam	
	Upstream gauging stations are: North Platte at North Platte: Station #669300. South Platte at North Platte: Station #676500, and the downstream gauging station is located at Maxwell: Station #228500 and the Supply Canal: Station #142001	
	Watershed area at the dam: 3,500,145 Ac	
Characteristics of Reservoir and Watershed	Two Zone of Effects: One upstream and one downstream. The Zone of Effect upstream is the Diversion pond, which backs water up approximately 2,000 feet to the confluence of the North and South Platte Rivers. The downstream Zone of Effect	

	is the Platte River from the Diversion (River Mile 310.5) to the Jeffrey River Return/Gothenburg Diversion (Platte River Mile 289.2).	
	Type of waterbody: River	
	Designated uses by state water quality agency	
	See section VII. Contacts for the contact information for the local non-governmental stakeholders	
	Maximum and Minimum water surface elevation: 2768.60 and 2768.75. msl	
	See Figures #11 & #12: Central Diversion Dam	
Designated Zones of Effect	There are two designated Zone of Effects associated with the Central Diversion Dam. Zone of Effect #3 is the Diversion Pond that extends 2,000 feet upstream of the diversion to the confluence of the North and South Platte Rivers. Zone of Effect #4 is the Platte River from the Diversion Dam downstream to the Jeffrey River Return/Gothenburg Division Dam (Platte River Mile 289.2). (Figure #2)	
Photographs and Maps	See Figure #11: Central Diversion Dam See Figure #12: Close-up View of Central Diversion Dam See Figure #13: Tern and Plover Habitat Area	

II.2 Standards Matrices for Central Diversion Dam

There are two designated Zone of Effects for this facility. The downstream Zone of Effect #4 (Figure #2) is the 21 miles of the Platte River below the Central Diversion Dam until you get to the Jeffrey River Return/Gothenburg Diversion Dam. The Gothenburg Diversion Dam is owned and operated by the Nebraska Public Power District.

II.2.UZ.1 Matrix of Alternative Standards – Upstream Zone

Table II-2. Facility Name: Central Diversion Dam
Zone of Effect: #3 Diversion Pond

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**		***X***			
E	**Watershed and Shoreline Protection**	***X***				
F	**Threatened and Endangered Species Protection**			***X***		
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**	***X***				

II.2.UZ.2 Ecological Flows Standards for Zone #3 Diversion Pond

The facility satisfies Standard A-1, Not Applicable/De Minimus Effect, in Zone 3

Information Required to Support Ecological Flows Standards

Criterion	*Standard*	*Instructions*
A	1	<u>Not Applicable / De Minimis Effect:</u> • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the diversion dam is located.

- For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.

As can be seen in Figure #11 the North Platte River and the South Platte River join to form the Platte River just upstream of the Central Diversion Dam. Water may be released directly from Lake Ogallala into the North Platte River or diverted into NPPD's Keystone Canal and routed through their system. The water is then returned to the South Platte River 3 miles upstream of the Central Diversion Dam. As can be seen in Figure #11, with the return water from the NPPD system there was much more water in the South Platte than the North Platte at the time the photo was taken.

Figure #12 shows the Central Diversion Dam in greater detail. There are two sections of radial gates that can allow water to pass from the Diversion Pond into the Platte River. Located between the sections of gates is the ogee, which allows excess flows into the Platte River if needed. On the south end of the Diversion Dam and the south River Gates are the Canal gates that allow water to be diverted into Central's 75-mile Supply Canal. Water can be passed through the gates of the Dam or pass over the ogee, but there are no bypasses around the structure.

- If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.

In effect this is a Run-of-River operation as there is little to no storage space within the pond and water outflow water equals inflows. The water either passes through or over the Diversion or is diverted into the Supply Canal. As noted earlier, water is only passed through/over the Diversion if there is an overabundance of water in the North and South Platte Rivers, if senior water right holders located below the diversion are exercising their rights to the water, or the U.S. Fish and Wildlife request that water from the Lake McConaughy Environmental Account be used to provide for in-stream flows.

- In a conduit project, identify the water source and discharge points for the conduit system within which the Diversion Dam is located.

Not Applicable

- For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment

zones can apply Criterion A-1 to pass this criterion.

While the water does back up 2,000 feet from the Diversion Dam, there is virtually no storage capacity within the pond and the fish are not managed in this area any differently than upriver. Central attempts to maintain the elevation of the pond just below the top of the ogee (2768.70' msl) during the summer and depending upon the availability of water during the winter the pond elevation may fluctuate between 2768.60 and 2768.75 msl. The higher elevation is done as an attempt to pass ice over the ogee instead of blocking entry into the canal. The elevation is controlled by either opening or closing the number of canal gates in use or by opening and closing river gates. The Supply Canal has a maximum capacity of 2,300 CFS and any additional flow is allowed to flow into the Platte River.

Supporting Documentation:

2018 Environmental Account Operating Plan

II.2.UZ.3 Water Quality Standards for Zone #3 Diversion Pond

The facility satisfies Standard B-2, Agency Recommendations, in Zone 3.

Information Required to Support Water Quality Standards

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

• *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.*

The Central Diversion Dam is not Water Quality Limited.

One issue with the Diversion Pond is the accumulation of fine grain sediment (sand) as the water from the North and South Platte Rivers enter the pond. Both the North Platte and South Platte Rivers carry a great deal of sand. Prior to irrigation development in Colorado, Wyoming, and Nebraska this resulted in a braided river that meandered and constantly changed its bedform (Braided river ecology: A literature review of physical habitats and aquatic invertebrate communities. Duncan Gray and Jon S. Harding Science for conservation: 279. https://www.doc.govt.nz/documents/science-and-technical/sfc279.pdf). With the

Diversion ponding up the upper 2,000 feet of the Platte River below the confluence of the North and South Platte Rivers the fine grain sand that makes up the bulk of the sediment carried by the rivers settles out. This sand must be removed on an annual basis and is dredged and either stored upriver in large spoil piles, or when flow is sufficient passed over the Diversion Dam and into the Platte River. Dredging begins in early spring and continues through fall. Central has permits from the U.S. Army Corps of Engineers (USACE) and the Nebraska Department of Environmental Quality (NDEQ) to discharge the dredged sand directly into the Platte River downstream of the Diversion Dam.

- Provide a copy of the most recent Water Quality Certificate, including the date of issuance.

See Supporting Documents.

- Identify any other agency recommendations related to water quality and explain their scientific or technical basis.

There is a minimum flow of 100 cfs required downstream of the Diversion during dredging activities.

- Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

The only compliance requirements to dredge sand directly into the downstream Platte River is a minim flow of 100 cfs which is monitored remotely from the Gothenburg Control Room. In addition, Central takes grab samples on a weekly basis of the water below the discharge to determine if dissolved oxygen is sufficient in the river below the discharge. If the dissolved oxygen falls below6.0 mg/l from April 1st to September 30th and 4.0 mg/l from October 1st to March 31st, discharge into the river is curtailed.

Supporting Documentation

NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ 2018 Water Quality Integrated Report Draft
NDEQ Letter by Marty Link
USACE Permit to Dredge Upstream of Central Diversion Dam.

II.2.UZ.4 Upstream Fish Passage Standards for Zone #3 Diversion Pond

The facility satisfies Standard C-1, *Not Applicable / De Minimis Effect* for Zone of Effect #3.

Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	*1*	*Not Applicable / De Minimis Effect:* • • *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).* • • *For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.* • • *Document available fish distribution data and the lack of migratory fish species in the vicinity.* • • *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

- *Explain why the facility does not impose a barrier to upstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural upstream movement (e.g., entrainment into hydropower turbines).*

There are no structures separating the North and South Platte Rivers from the upstream end of the Diversion Pond thus any fish within the pond can freely move upstream at any time.

- *For riverine fish populations that are known to move upstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.*

There are no fish species that are prevented from successful completion of their life cycles by moving from the Diversion Pond upstream. See the NGPC letter by Dave Tunink.

- *Document available fish distribution data and the lack of migratory fish species in the vicinity.*

See Fish Diversity Spreadsheet for the North and South Platte Rivers

- *If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.*

There has been no extirpation of any fish species from the area.

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

II.2.UZ.5 Downstream Fish Passage Standards for Zone #3 Diversion Pond

The facility satisfies Standard D-2, Agency Recommendations, in Zone 3.

Information Required to Support Downstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
D	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

Fish are restricted from moving downstream into the Platte River most of the time. If water is being released to the River through the River Gates or over the ogee fish can at that time move downriver. Fish can also move into the Supply Canal through the Canal gates.

There has never been a concern about the passage of fish either upstream or down expressed by any resource agency. See NGPC letter from Dave Tunink

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

See the NGPC letter by Dave Tunink in regard to fish movement

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented

There are no provisions for fish passage required by any agency at the Central Diversion Dam.

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

II.2.UZ.6 Shoreline and Watershed Protection Standards for Zone #3 Diversion Pond

The facility satisfies Standard E-1, Not Applicable/De Minimis Effect, in Zone 3.

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	1	Not Applicable / De Minimis Effect: • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

- If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).

There are no lands associated with the Zone of Effect #3 that have significant ecological value except a spoil pile of sand dredged from the pond in the early 90's that is annually attractive to a couple of pairs of least terns and one or two pair of piping plovers (see next Standard) (Figure 13). CNPPID protects that pile of sand and manages it under the annual Tern and Plover Management plan.

On both the north and south side of the pond are constructed dikes to prevent water during times of flooding from going around the diversion. These dikes are owned by Central and are not open to the public. North of the North Dike is the North Platte airport where access is prohibited and south of the South Dike is also owned by Central.

- Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Not Applicable

II.2.UZ.7 Threatened and Endangered Species Standards for Zone #3 Diversion Pond

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	3	Recovery Planning and Action: • If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents. • Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

- If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents.

Present in the vicinity of the Zone of Effect #3 are annually nesting least terns and piping plovers. Both are State and Federally listed species. The area where the birds nest is a large spoil pile on lands owned by CNPPID (Figure #13). The entire nesting area is delaminated each year and is placed off limits to human activity. The area is managed annually with pre-emergent herbicide or disking, or both to maintain the area as vegetation free. Management of the area is assured in License Article 420 Tern and Plover Habitat Areas. In addition, monitoring is conducted on a twice weekly or more often basis and the results of that monitoring are presented to the U.S. Fish and Wildlife Service and Nebraska Game and Parks Commission on an annual basis as part of the annual Lake McConaughy Tern and Plover Monitoring Report.

The river otter (*Lontra Canadensis) is a State Listed threatened species that was reintroduced along Platte River. The species is doing well and expanding its range in Nebraska. Otters have been observed by Central personal in the Diversion Pond and along the river downstream of the Diversion. There are no special protective policies in place by Central to provide specific protection of this species except the restriction of access to the area.*

*According to the Nebraska Game and Parks Commission, "*River otter populations have expanded since their reintroduction. High survival rates and the adaptability of this species have contributed to their success.

With continued protection and habitat conservation, the river otter is likely to make a full recovery in Nebraska." http://rarespecies.nebraska.gov/portfolio/river-otter/

There are no agency recommendations pursuant to River Otters at the Central Diversion Dam.

- Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

Not applicable as Central does not have incidental take permits nor a biological opinion in association with river otters.

Supporting Documentation:

Tern and Plover Nest Monitoring Annual Report for 2017
Land and Shoreline Management Plan

II.2.UZ.8 Cultural and Historic Resources Standards for Zone #3 Diversion Pond

Information Required to Support Cultural and Historic Resources Standards.

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

All Cultural and Historic Resources are protected via the Cultural and Historic Resources Management Plan.

- Document that the facility is in compliance with all such plans.

Compliance under the Central Resources Management Plan is monitored by Central and any non-compliance issues are reported directly to FERC and the State Historical Preservation Officer. No reports of non-compliance have been made since 2013.

Supporting Documentation:

Cultural Resources Management Plan

II.2.UZ.9 Recreational Resources Standards for Zone #3 Diversion Pond

Information Required to Support Recreational Resources Standards

Criterion	*Standard*	*Instructions*
H	1	Not Applicable / De Minimis Effect: • Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.

Not Applicable / De Minimis Effect:

- Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.

The entire Central Nebraska Public Power and Irrigation District property, associated with Zone of Effect #3, the north and south dikes, the pond and the area around the diversion

and canal is a controlled access area with no fishing, no trespassing, and no entry signs posted. This is both a public safety issue and protection of the structure, our shop, and vehicles parked in the area from vandalism.

As per Nebraska State Law boaters can float down from upstream and portage around the Diversion Dam on the north side and re-launch below the dam in the Platte River.

Supporting Documentation:

Form 80 Recreational Reports for 2014

II.2.DZ.1 Matrix of Alternative Standards – Downstream Zone:

Table II-3. Facility Name: Central Diversion Dam
Zone of Effect: #4 Downstream Platte River

	Criterion	*Alternative Standards*				
		1	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**		***X***			
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**		***X***			
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**	***X***				
F	**Threatened and Endangered Species Protection**	***X***				
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**	***X***				

II.2.DZ.2 Ecological Flow Standard for Zone of Effect #4 Downstream Platte River

The facility satisfies Standard A-2, Agency Recommendation, in Zone 4

Information Required to Support Ecological Flows Standards

Criterion	*Standard*	*Instructions*
A	2	Agency Recommendation • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to agency management goals and objectives for fish and wildlife.

- Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations).

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

As noted in the introduction, all downstream flow issues were addressed with the formation of the Environmental Account in Lake McConaughy. The U.S. Fish and Wildlife Service can request at any time to release water from the Environmental Account to provide for in-stream flow below the Diversion.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.

The availability of water for use in the Environmental Account allows the U.S. Fish and Wildlife Service to prioritize use of the water so that the greatest overall fish and wildlife needs are met. The Service meets with other stakeholders on an annual basis to assess those needs and then it provides an annual operating plan (attached) showing those priorities

- Explain how the recommendation relates to agency management goals and objectives for fish and wildlife.

It directly relates to the agency management goals because it is the agency that is determining how, when, and how much of the water set aside for its use is used.

- Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations).

The water in the Environmental Account can be released and utilized as in-stream flow at any time of year when the Service determines that it is necessary to protect fish and wildlife habitat downstream of the Diversion

Supporting Documentation:

Environmental Account (Exhibit X of the 1998 FERC License)
2018 Environmental Account Operating Plan

II.2.DZ.3 Water Quality Standards for Zone #4 Downstream Platte River

The facility satisfies Standard B-2, Agency Recommendations, in Zone 4.

Information Required to Support Water Quality Standards

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

• *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.*

The Platte River below the Central Diversion Dam is not Water Quality Limited.

- Provide a copy of the most recent Water Quality Certificate, including the date of issuance.

See Supporting documents.

- Identify any other agency recommendations related to water quality and explain their scientific or technical basis.

As noted in the commentary about the dredging of the upstream pond the Corps of Engineers as well as the Nebraska Department of Environmental Quality have issued permits to Central to discharge the sand dredged upriver from the Diversion Pond directly into flowing water of at least 100 cfs in the Platte River.

- Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

Central on a weekly basis takes an instantaneous sample from the downstream flow where the discharge is taking place and measures it for dissolved oxygen and temperature. If the dissolved oxygen falls below 6.0 mg/l from April 1st to September 30th and 4.0 mg/l from October 1st to March 31st, discharge into the river is curtailed. In addition, if the flow drops to below 100 cfs discharge must stop.

There are no downstream, in-stream flow requirement for Central's Diversion Dam unless

Central is actively dredging above the Diversion and discharging the sediment downstream.

By returning the dredged material to the flowing water downstream of the diversion it maintains the sediment load in the downstream flow. This both prevents "down cutting" of the river bed and provides for excess sediment similar to pre-development. That excess sediment is necessary for a braided river to continue to behave in a way as similar as possible to the historic river. Central has Corps of Engineers and Nebraska Department of Environmental Quality discharge permits to allow the discharge in Platte River water with a minimum of 100 cfs flow. Flow is monitored remotely from the Gothenburg Control Center with units calibrated twice daily. Record of the flow measurements are maintained by Central and provided to agencies upon request.

Supporting Documentation:

NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ 2018 Water Quality Integrated Report Draft
NDEQ Letter by Marty Link
USACE Permit to Dredge Upstream of Central Diversion Dam

II.2.DZ.4 Upstream Fish Passage Standards for Zone #4 Downstream Platte River

The facility satisfies Standard C-2, Agency Recommendation Zone of Effect #4.

Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	2	<u>Agency Recommendation:</u> • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

There are no native Platte River fish whose lifecycle is limited by the inability to move upstream from the Platte River below the Diversion Dam. See NGPC letter from Dave Tunink in Supporting Documentation.

- Explain the scientific or technical basis for the agency recommendation, including methods

and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

See NGPC letter from Dave Tunink in section IX.

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

See NGPC letter by Dave Tunink in section IX.

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter from Dave Tunink

II.2.DZ.5 Downstream Fish Passage Standards for Zone #4 Downstream Platte River

The facility satisfies Standard D-2 Agency Recommendation in Zone 4

Criterion	Standard	Instructions
D	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

No agency has expressed concern of the restriction of fish moving downstream into Zone of Effect #4.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

No species of migratory fish that requires downstream movement at the Diversion Dam have been identified to Central. For fish species abundance, see the Fish Diversity Spreadsheet in section IX.

Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

There are no provisions for fish passage recommended by any agency.

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

II.2.DZ.6 Shoreline and Watershed Protection Standards for Zone #4 Downstream Platte River

The facility satisfies Standard E-1: Not Applicable/De Minimis Effect in Zone 4.

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	1	Not Applicable / De Minimis Effect: • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

- If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).

There are no lands controlled or owned by CNPPID within the Zone of Effect #3 that have significant ecological value. All land and shoreline within the Zone of Effect #4 except a few hundred feet located at the Diversion are private lands. Normal river erosion and accretion occur throughout the 20 miles of the Zone

- Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Not Applicable

II.2.DZ.7 Threatened and Endangered Species Standards for Zone #4 Downstream Platte River

The facility satisfies Standard F-1: Not Applicable/ De Minimis Effect in Zone 4.

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	1	Not Applicable / De Minimis Effect: • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

- Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.

At present there are no known use of Zone of Effect #4 by any Federally listed species other than occasional forage by least terns and piping plovers directly below the Diversion. There are historic reports of roosting by a whooping crane in that 20-mile section of river. If terns and/or plovers are foraging on Central's property they are protected under Central's Least Tern and Piping Plover Management Plan.

The river otter (*Lontra Canadensis) is a State Listed threatened species that was reintroduced along Platte River. The species is doing well and expanding its range in Nebraska. Otters have been observed by Central personnel in the Diversion Pond and along the river downstream of the Diversion. There are no special protective policies in place by Central to provide specific protection of this species except the restriction of access to the area.*

According to the Nebraska Game and Parks Commission: River otter populations have expanded since their reintroduction. High survival rates and the adaptability of this species have contributed to their success.

With continued protection and habitat conservation, the river otter is likely to make a full recovery in Nebraska." http://rarespecies.nebraska.gov/portfolio/river-otter/

There are no agency recommendations pursuant to River Otters at the Central Diversion Dam.

- Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the area.

Central has no incidental take permits nor a biological opinion that addressed river otters.

Supporting Documentation:

Management Plan for Tern and Plover Habitat Along the Platte River
Tern and Plover Nest Monitoring Annual Report for 2017
PRRIP 2017 Tern and Plover Report for the Central Platte River

II.2.DZ.8 Cultural and Historic Resources Standards for Zone #4 Downstream Platte River

The facility satisfies Standard G-2: Agency Recommendation in Zone 4

Information Required to Support Cultural and Historic Resources Standards

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

All Cultural and Historic Resources on Central property are protected via Central's Cultural Resources Management Plan. The remainder of Zone of Effect #4 is private land and the cultural and historic resources are unknown.

- Document that the facility is in compliance with all such plans

Compliance on Central's property is monitored by Central and any non-compliance issues are reported directly to FERC and the State Historical Preservation Officer. There have been no non-compliance reports made since 2013,

Supporting Documentation:

Cultural Resources Management Plan

II.2.DZ.9 Recreational Resources Standards for Zone #4 Downstream Platte River

The facility satisfies Standard H-1: Agency Recommendation in Zone 4.

Information Required to Support Recreational Resources Standards

Criterion	*Standard*	*Instructions*
H	1	Not Applicable / De Minimis Effect: • Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.

- Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.

Central only owns the first 3,000 feet of riverfront on the south side. This was recently purchased for storing the dredging material where it can be easily put back in the river downstream when river flows are high. Central neither owns nor controls any other land between the Central Diversion Dam and the Gothenburg Diversion. The shore on both sides of the river are private property and access to the river is controlled by the laws of the State of Nebraska. Boating on the water is open along the entire length but land access is restricted by the private landownership on each side of the river.

III. JEFFREY HYDRO PLANT

III.1 Facility Description for Jeffrey Hydro Plant

Water diverted into the Supply Canal travels 21 miles down the canal to the Jeffrey Dam and Jeffrey Hydro Plant (Jeffrey Hydro). This dam creates the Jeffery Reservoir (a.k.a. Jeffrey Lake), a 575 surface-acre regulating reservoir for the Jeffrey Hydro.

The Jeffrey Hydro consists of two 10,440 kW turbines and two 10,800 kW generators. There is no by-pass structure around the Hydro and all water exiting the Jeffery Reservoir must pass through one or both turbines.

The maximum and minimum elevations for the Reservoir are 2759.0 msl – 2750.5 msl, however normal operational levels are 2758.5 msl – 2757.0 msl. Elevation fluctuations are mainly in response to available water supply.

There are two Zone of Effects (Zone or ZOE) associated with the Jeffrey Hydro, the upstream Zone is the Jeffrey Reservoir and the downstream Zone is the Jeffrey Hydro River Return (Figure #2). From the hydro's tailrace the Supply Canal takes the water 3.5 miles to the Jeffrey Hydro River Return. Here the water can be diverted back to the Platte River through a 1.5 mile return canal or it may continue on down the Supply Canal to Johnson Reservoir.

The River Return Zone of Effect is very small as the water from the tailrace joins the Platte River just upstream of the Gothenburg Diversion Canal (Figure 17).

Table III-1. Information Required for the Project Description – Jeffrey Hydro Plant

Information Type	*Variable Description*	*Response(and reference to further details)*
Name of the Facility	Jeffrey Hydro Plant, FERC # 1417	
Location	Supply Canal	
	North Platte River Basin	
	Brady, Lincoln County, Nebraska	
	River mile of dam above next major river	
	40* 57' 36" North Latitude	
	100* 24' 17" West Longitude	
Facility Owner	Don Kraus, General Manager	
	The Central Nebraska Public Power and Irrigation District (Central)	
	Representative in LIHI certification: Eric Hixson, Engineering Services Manager.	
	FERC Project Number 1417 (Kingsley Dam Project), License issued July 29, 1998 and expires on June 30, 2038	
Regulatory Status	FERC license type: Major	
	Water Quality Certificate: Nebraska Department of Environmental Control. August 30, 1988 Section 401 Water Quality Certification.	
	See section IX. Supporting Information for supporting documents referenced in this application	
	Initial Operations: 1941	
Power Plant Character-istics	Total name-plate capacity 21.6 MW Ten-year average: 106,990 MWh	
	Average annual generation (MWh)	
	Two 10,440 kW turbines and two 10,800 kW generators maximum and minimum hydraulic capacity of each unit 300 to 1300 cfs for single unit	
	Modes of operation: peaking	

	Dates and types of major equipment upgrades: None since 2013	
	Dates, purpose, and type of any recent operational changes: None since 2013	
	Plans, authorization, and regulatory activities for any facility upgrades: None planned	
	1941	
Characteristics of Dam, Diversion, or Conduit	70 foot-high compacted earthfill dam	
	Spillway elevation and hydraulic capacity	
	Tailwater elevation	
	A 700-foot-long concrete lined inlet canal with two 12-foot diameter, 360-foot-long penstocks, See Figure #14 and Figure #15.	
	Dates and types of major, generation-related infrastructure improvements: None since 2013	
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.): Power, Water Supply	
	Water source the Tri-County Supply Canal and Jeffrey Reservoir	
	Water discharge location or facility: Jeffrey Canyon Hydro Plant	
	575 Surface acre regulating reservoir with a gross storage capacity of 11,500 acre-feet and normal maximum surface elevation of 2758.5 MSL	
Characteristics of Reservoir and Watershed	Maximum water surface elevation 2759.0 ft. MSL	
	Maximum and minimum are elevation 2759.0 msl and 2750.5 msl. volume and water surface elevations for designated power pool, if available	
	Upstream dam: Jeffery Canyon Dam owned by the Central Nebraska Public Power and Irrigation District FERC #1417 Supply Canal mile: 21.1	
	Downstream dam is the Central Double Check on the Supply Canal which takes water down the Jeffrey Hydro Return	

	Canal to the Gothenburg Diversion Dam owned and operated by NPPD.	
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	
	Area inside FERC project boundary: 764 Ac.	
	Average annual flow at the dam: 857,385 acre feet	
Hydrologic Setting	Average monthly flows: 71,449 Acre-feet	
	Location and name of relevant stream gauging stations above and below the facility: This is part of the bypass canal.	
	Watershed Area at the dam 9,039 Ac.	
	There are two Zone of Effects associated with the Jeffrey Dam and Hydro.	
Designated Zones of Effect	The Upstream Zone of Effect is Jeffrey Reservoir and the downstream Zone of Effect the Supply Canal. Figure #14.	
	Type of waterbody: Impoundment	
	Delimiting structures: Upstream the inlet gate to Jeffrey Reservoir (Canal Mile 21.2) is the delimiting structure for Zone of Effect #5. The Jeffrey Hydro (Canal Mile 23.7) is the downstream delimiting structure for Zone of Effect #5 and the upstream delimiting structure for Zone of Effect #6. The downstream delimiting structure for Zone of Effect #6 is the Central Double Check (Canal Mile 26.9) and the Gothenburg Diversion Dam. Figure 16 and Figure 17:	
	Designated uses by state water quality agency: Aquatic life, Agriculture water supply, Industrial water supply, and Aesthetics	
Additional Contact Information	See section VII. Contacts for the contact information for the local, state, and federal resource agencies	
	See section VII. Contacts for the contact information for the local non-governmental stakeholders	

	Photographs of key features of the facility and each of the designated zones of effect	
Photo-graphs and Maps	Maps, aerial photos, and/or plan view diagrams of facility area and river basin	
	See Figure #14: Jeffrey Dam and Hydro See Figure #15: Jeffrey Hydro Plant See Figure #16: Jeffrey Reservoir See Figure #17: Jeffrey Hydro River Return and Gothenburg Diversion Dam See Figure #18: Close up of Central Double Check	

III.2 Standards Matrices for Jeffrey Hydro Plant

III.2.UZ.1 Matrix of Alternative Standards – Upstream Zone

Table III-2. Facility Name: Jeffrey Hydro Plant
Zone of Effect: #5 Jeffrey Reservoir

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	X				
B	**Water Quality**		X			
C	**Upstream Fish Passage**	X				
D	**Downstream Fish Passage**		X			
E	**Watershed and Shoreline Protection**		X			
F	**Threatened and Endangered Species Protection**	X				
G	**Cultural and Historic Resources Protection**		X			
H	**Recreational Resources**		X			X

III.2.UZ.2 Ecological Flows Standards for Zone #5 Jeffrey Reservoir

The facility satisfies Standard A-1, Not Applicable/De Minimus Effect, in Zone 5.

Information Required to Support Ecological Flows Standards

Criterion	*Standard*	*Instructions*
A	1	<u>Not Applicable / De Minimis Effect:</u> • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located. • For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.

See Figure #14 in section VIII.

- If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.

This is not a run-of-river operation

- In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.

The water source for Jeffrey Canyon Reservoir and for the Jeffrey Canyon Hydro Plant is the Supply Canal. Water enters the Reservoir at the Jeffrey Inlet. The only discharge from the Reservoir is through the Jeffrey Canyon Hydro. There is no bypass canal or conduit around the power plant.

- For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

The Jeffrey Reservoir was formed in 1941 when a dam was placed at the lower end of the canyon. Water enters the reservoir from the Supply Canal and then backs up the canyon. The water then exits the reservoir through the Jeffrey Hydro. The reservoir is leased to the

Nebraska Game and Parks Commission (as are all of Central's water resources) for recreational use and NGPC stocks the lake on a regular basis. Jeffrey Reservoir is a regulating reservoir for the Hydro and water can be temporarily stored and released to maximize power production. Typically, the reservoir is operated between elevation 2758.9 msl and elevation 2757.0 msl unless an outage is planned and water cannot flow through the Plant. During these planned outages the lake is lowered to a minimum elevation of 2750.5 msl prior to the outage so that during the outage water can re-fill the reservoir.

III.2.UZ.3 Water Quality Standards for Zone #5 Jeffrey Reservoir

The facility satisfies Standard B-2, Agency Recommendations, in Zone 5.

Information Required to Support Water Quality Standards

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

- If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.

There is a fish consumption warning for most of the Supply Canal and Reservoir due to Hazard Index Compounds. Fish consumption Assessments are being completed along the entire length of the system and the Assessment for the Jeffrey Reservoir has been completed (MP – 11). The reservoir is listed as a Category 2 water body, or one in which all designated uses are met, but as yet there is insufficient information to designate it as a Category #1 water body (one in which all uses are met). The consumption advisory has no connection with Central's operations or the Jeffrey Hydro operation.

- Provide a copy of the most recent Water Quality Certificate, including the date of issuance.

See Supporting Documents.

- Identify any other agency recommendations related to water quality and explain their scientific or technical basis.

There are no other agency recommendations related to water quality

- Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

There are no compliance activities related to Jeffrey Reservoir.

Supporting Documentation

NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ 2018 Water Quality Integrated Report Draft
NDEQ Letter by Marty Link

III.2.UZ.4 Upstream Fish Passage Standards for Zone #5 Jeffrey Reservoir

The facility satisfies Standard C-1, Not Applicable / De Minimis Effect, in Zone 5.

Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. • Document available fish distribution data and the lack of migratory fish species in the vicinity. If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

- Explain why the facility does not impose a barrier to upstream fish passage in the designated zone.

Fish are free to move throughout the Zone of Effect which is limited to the Jeffrey Reservoir from the Hydro to the inlet.

- Document available fish distribution data and the lack of migratory fish species in the vicinity.

See the Fish Species List in the Fish Diversity Spreadsheet in section IX.

- If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

No known fish have been extirpated from the Reservoir.

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

III.2.UZ.5 Downstream Fish Passage Standards for Zone 5 Jeffrey Reservoir

Information Required to Support Downstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
D	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

Fish are restricted from downstream movement by the Jeffrey Hydro. There are no native species that cannot complete their lifecycle due to that restriction. See NGPC letter from Dave Tunink.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

See the letter from Dave Tunink with the Nebraska Game and Parks Commission

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented

Not applicable

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

III.2.UZ.6 Shoreline and Watershed Protection Standards for Zone #5 Jeffrey Reservoir

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

- Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).

All the shoreline in the Jeffrey Reservoir area is protected through Central's Land and Shoreline Management Plan.

- Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

There have been no findings of non-compliance with the Land and Shoreline Management Plan by FERC since the previous recertification in 2013.

Supporting Documentation:

Land and Shoreline Management Plan

III.2.UZ.7 Threatened and Endangered Species Standards for Zone #5 Jeffrey Reservoir

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	1	Not Applicable / De Minimis Effect: • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

- Document that there are no listed species in the facility area or affected riverine zones upstream of the facility.

There are no listed species present in Jeffrey Canyon Reservoir. There are American burying beetles (*Nicrophorus americanus*) present in the surrounding areas. This is both a federal and state listed species. The beetles are protected on CNPPID property through the Land and Shoreline Management Plan.

- If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.

Not applicable as there are no know listed species that were once present and are now gone.

- If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken

Not applicable as we are not reintroducing any species.

III.2.UZ.8 Cultural and Historic Resources Standards for Zone #5 Jeffrey Reservoir

Information Required to Support Cultural and Historic Resources Standards

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

The surrounding property owned and operated by CNPPID is protected through the Cultural Resource Management Plan

- Document that the facility is in compliance with all such plans

All non-compliance issues are reported immediately to FERC and the State Historical Perseveration Officer. There have been no non-compliance reports since 2013.

Supporting Documentation:

Cultural Resources Management Plan

III.2.UZ.9 Recreational Resources Standards for Zone #5 Jeffrey Reservoir

Information Required to Support Recreational Resources Standards

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.

The Jeffrey Canyon Reservoir is part of the recreational lease that Central has with the NGPC. At the reservoir there is a small public use area and there are public boat ramps located on Central property. The lake is open for fishing, boating, skiing, etc.

- Document that the facility is in compliance with all such recommendations and plans.

The facility is in compliance with Central's Land and Shoreline Management Plan

Supporting Documentation:

Land and Shoreline Management Plan
NGPC Recreational Lease
Form 80 Recreational Reports for 2014

H	PLUS	Bonus Activities: • Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails). • Document that such new recreational opportunities did not create unmitigated impacts to other resources.

- Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails).

Central provides areas around the Reservoir for public use though our Recreational Lease with NGPC. In addition, Central has worked with NGPC to improve the public boat ramp and to do significant dredging within the lake to open up boat passage from one area to another.

- Document that such new recreational opportunities did not create unmitigated impacts to

other resources.

There were no negative impacts to any other recreational opportunities (fishing, boating, skiing, etc.) by these activities…quite the opposite as it expands those opportunities.

III.2.DZ.1 Matrix of Alternative Standards – Downstream Zone

Table III-3. Facility Name: Jeffrey Hydro Plant
Zone of Effect: #6 Jeffrey Hydro River Return

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	X				
B	**Water Quality**		X			
C	**Upstream Fish Passage**		X			
D	**Downstream Fish Passage**	X				
E	**Watershed and Shoreline Protection**		X			
F	**Threatened and Endangered Species Protection**	X				
G	**Cultural and Historic Resources Protection**		X			
H	**Recreational Resources**		X			

III.2.DZ.2 Ecological Flows Standards for Zone #6 Jeffrey Hydro River Return

The facility satisfies Standard A-1, Not Applicable/De Minimus Effect, in Zone 6.

Information Required to Support Ecological Flows Standards

Criterion	***Standard***	***Instructions***
A	1	<u>Not Applicable / De Minimis Effect:</u> • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the diversion dam is located. • For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.

Figures #17 and #18 shows there is no bypass around the Central Double Check Gate.

- If a Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.

This is not a Run-of-River operation

- In a conduit project, identify the water source and discharge points for the conduit system within which the diversion dam is located.

All water in Nebraska is governed by Nebraska Water Rights Laws. Central, under those laws, may divert water at the Central Diversion Dam and route it through the Supply Canal to Jeffrey Reservoir and through the Jeffrey Hydro Plant. After water passes through the plant, depending upon the ownership of the water, the water can continue down the Supply Canal to Johnson Reservoir or be returned to the Platte River where other irrigation companies have ownership. It is this river return that is Zone of Effect #6.

The water source for Zone of Effect #6 is the water leaving the Jeffrey Reservoir through the Jeffrey Hydro. This water moves down the tailrace of the Hydro to the Jeffrey Hydro River Return where it discharges the water into the Platte River (one discharge point) immediately upstream of the Gothenburg Diversion, a structure owned and operated by NPPD. At the head of the river return is a check gate (Central Double Check, Figure #18) and water can be passed down the Jeffrey Hydro River Return or to the Supply Canal. The determining factor as to which direction the water is moved is the call for senior water rights and or a request by the U.S. Fish and Wildlife Service to pass water from the Environmental Account back to the River at this location. Central is allowed to divert natural flow rights at the Central Diversion Dam but must return that water back to the river upstream of the natural flow right holders (the Gothenburg Diversion and NPPD)

- For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

This is not an impoundment.

III.2.DZ.3 Water Quality Standards for Zone #6 Jeffrey Hydro River Return

The facility satisfies Standard B-2, Agency Recommendations, in Zone 6.

Information Required to Support Water Quality Standards.

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

- *If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.*

Note, the entire Central System is under a fish consumption advisory for hazardous materials. The advisory is not due to any of Central's operations.

- Provide a copy of the most recent Water Quality Certificate, including the date of issuance.

See the Supporting Documents.

- Identify any other agency recommendations related to water quality and explain their scientific or technical basis.

There are no agency recommendations related to water quality in Zone of Effect #6.

- Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

There are no water quality related recommendations for the Supply Canal.

Supporting Documentation:

NDEQ Letter by Marty Link
NDEQ 2018 Water Quality Integrated Report Draft
NDEQ 8-30-1988 Section 401 State Water Quality Certification

III.2.DZ.4 Upstream Fish Passage Standards in Zone #6 Jeffrey Hydro River Return

The facility satisfies Standard C-2, Agency Recommendation Zone of Effect #6.

Supporting Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

Fish are not able to move from the Jeffrey River Return upstream into the Supply Canal. There are no native Platte River fish whose lifecycle is limited by the inability to move upstream from the Supply Canal.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

See NGPC letter by Dave Tunink in section IX.

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

There are no provisions for fish passage

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

III.2.DZ.5 Downstream Fish Passage Standards in Zone #6 Jeffrey Hydro River Return

The facility satisfies Standard D-1, Not Applicable/De Minimis Effect, in Zone 6.

Supporting Information Required to Support Downstream Fish Passage Standards

Criterion	Standard	Instructions
D	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

- Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).

The Jeffrey River Return flows directly into the Platte River. There are no gates or any other structures separating the mouth of the return and the River and fish are free to move downstream from the Jeffrey River Return to the Platte River.

- For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.

As noted above, there is nothing to prevent the movement of the fish from the return to the river.

- Document available fish distribution data and the lack of migratory fish species in the vicinity.

See NGPC letter from Dave Tunink

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

III.2.DZ.6 Shoreline and Watershed Protection Standards for Zone #6 Jeffrey Hydro River Return

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

- Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).

The entire length of the Jeffrey River Return is owned and controlled by Central and is managed through the Land and Shoreline Management Plan

- Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

The area is in compliance with Central's Land and Shoreline Management Plan.

Supporting Documentation:

Land and Shoreline Management Plan

III.2.DZ.7 Threatened and Endangered Species Standards for Zone #6 Jeffrey Hydro River Return

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	1	Not Applicable / De Minimis Effect: • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

- Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.

There are no known listed species along this stretch of the Supply Canal. During the winter is common for bald eagles to perch in trees lining the lower end of the Return.

- If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.

Not applicable as no species were present in the past and are now extirpated.

- If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

No reintroduction efforts are being made for any species

III.2.DZ.8 Cultural and Historic Resources Standards for Zone #6 Jeffrey Hydro River Return

Information Required to Support Cultural and Historic Resources Standards

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

All Cultural and Historic Resources on CNPPID property are protected via the Cultural Resource Management Plan

- Document that the facility is in compliance with all such plans

Central monitors compliance of the Cultural Resources Management Plan and any non-compliance issues are reported immediately to FERC and to the State Historical Preservation Officer. No reports of non-compliance issues have been issued since 2013.

Supporting Documentation:

Cultural Resources Management Plan

III.2.DZ.9 Recreational Resources Standards for Zone #6 Jeffrey Hydro River Return

Information Required to Support Recreational Resources Standards

Criterion	Standard	Instructions
H	2	Agency Recommendation: Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. Document that the facility is in compliance with all such recommendations and plans.

- Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.

The limited amount of property owned by Central along the Jeffrey River Return is open to the public as per Central's Land and Shoreline Management Plan.

- Document that the facility is in compliance with all such recommendations and plans.

There have been no findings of non-compliance with the Land and Shoreline Management Plan by FERC since the previous recertification in 2013.

Supporting Documentation:

Land and Shoreline Management Plan

IV. JOHNSON #1 HYDRO PLANT

IV.1 Facility Description for Johnson #1 Hydro Plant

The fourth dam in the Kingsley Dam Project is the Johnson Dam and the Johnson #1 Hydro Plant (Johnson #1 Hydro or J1 Hydro). This 8,336' long, 47-foot high dam creates the 2,500 surface-acre Johnson Reservoir (a.k.a. Johnson Lake). The inlet to the reservoir from the Supply Canal is at canal mile 63.3. Operating elevations for the reservoir fluctuate between elevation 2616.7' msl and 2618.2' msl.

The outlet of the reservoir is through the Johnson #1Hydro Plant (canal mile 66.1). Similar to the Jeffery Hydro Plant, the Johnson #1 Hydro consists of two 10,030 kW turbines and two 10,800 kW generators. There is a 4.5-foot diameter bypass that can bypass both turbines.

There are two irrigation systems associated with Johnson Reservoir. Just upstream of the inlet water can be allowed to flow into the E65 Canal which supplies approximately 43,000 acres of farmland with irrigation water. Located adjacent to the E65 Canal is the Elwood Reservoir.

Elwood Reservoir is filled during the non-irrigation season by diverting water from the Supply Canal into the E65 Canal. The water is pumped into the reservoir at the Carl T. Curtis Pump Station. Each year, approximately 24,715 acre-feet are pumped into the reservoir, which has a capacity of more than 40,000 acre-feet. The water is then allowed to flow back out of the reservoir during the irrigation season for delivery to irrigation customers. In addition, Central has been working with the State of Nebraska, Tri-Basin Natural Resources District and the Platte River Program to divert excess river water and pump it into Central's Elwood Reservoir for groundwater recharge.

The second irrigation system, E67 Canal, is located between Johnson Reservoir and the J1 Hydro and it provides water to approximately 5,000 acres.

Operation elevation of Johnson Reservoir is determined primarily by available water supply. During the irrigation season elevation of the reservoir is generally kept lower as a part of Central's "Spike-Flow Plan" as described below:

Central's Flow Attenuation Plan, or "Spike-Flow Plan" (Plan), was developed with the FWS and the Nebraska Game and Parks Commission. It is intended to help attenuate (reduce) flows in the Platte River below the Overton measuring gauge during the least tern and piping plover nesting seasons.

The Plan is designed to keep Platte River levels at lower levels, thus reducing the chances of flooding nests located on sandbars. The Plan requires Central to use Elwood Reservoir and up to 2,500 acre-feet of space in Johnson Reservoir and immediately above the Johnson #2

Hydro Plant to help attenuate river flows. It enables Central to respond to large rain events during the irrigation season and reduce the release of rejected irrigation water to the river.

Water is released from Lake McConaughy during the irrigation season to serve more than 100,000 irrigated acres primarily in Gosper, Phelps and Kearney counties. Water from Lake McConaughy takes four to five days to travel the 125 miles to the headworks of the irrigation systems. The Supply Canal also collects rainfall runoff in its watershed, so its flow may vary beyond what is diverted at the Central Diversion Dam.

On occasion, large rainfall events occur in the Platte River basin and Central's irrigated area. Heavy rainfall increases river flows and often prompts many irrigators to stop taking water. Since these rain events sometimes occur with little notice, and water has already been released to meet irrigation demands, a large quantity of water may be moving through Central's system when it isn't needed for irrigation. This excess water must either be regulated in Central's system or returned to the river. Returning the water to the river means losing precious storage water for irrigation purposes.

To have 2,500 acre-feet of space in Johnson Reservoir to hold rain and rejected irrigation water, the reservoir must be kept at the lower end of normal levels. From June 1 to Aug. 15 each year, Johnson Reservoir will be operated near the low end of the normal operation range so that space is available if attenuation is required. When attenuating flows, Johnson Reservoir levels will increase until the water is released to the river at low flows or diverted to the irrigation canals. The water levels will then decline to the lower end of the operating range in preparation for another attenuation event.

There are two Zone of Effects (Zone or ZOE) associated with the Johnson Dam. The upstream Zone of Effect is Johnson Reservoir while the downstream Zone of Effect is downstream of the Johnson Canyon #2 Hydro Plant and the Johnson #2 River Return and the Platte River from River mile 246.5 downstream 17 miles to the Kearney Diversion owned and operated by NPPD (Figure #3).

Table IV-1. Information Required for the Project Description – Johnson #1 Hydro Plant

Information Type	***Variable Description***	***Response (and reference to further details)***
Name of the Facility	Johnson #1 Hydro Plant (J1 Hydro), FERC # 1417	
Location	Supply Canal	
	Platte River Basin	
	Lexington, Dawson County, Nebraska	
	River mile of dam above next major river	
	40* 41 34" North Latitude	
	99* 49' 07" West Longitude	

Facility Owner	Don Kraus, General Manger	
	The Central Nebraska Public Power and Irrigation District	
	Representative in LIHI certification: Eric Hixson, Engineering Services Manager.	
	FERC Project Number 1417 (Kingsley Dam Project), License issued July 29, 1998 and expires on June 30, 2038	
Regulatory Status	FERC license type or special classification (e.g., "qualified conduit")	
	Water Quality Certificate identifier and issuance date, plus source agency name	
	See section IX. Supporting Information for supporting documents referenced in this application	
	Initial Operations: 1941	
Power Plant Character-istics	Generation Capacity: 21.6 MW	
	Average annual generation (MWh) Ten-year average: 79,461 MWh	
	Two 10,030 kW turbines and two 10,800 kW generators with an installed capacity of 20,880 kW.	
	Modes of operation: peaking	
	Dates and types of major equipment upgrades: None since 2013.	
	Dates, purpose, and type of any recent operational changes	
	Plans, authorization, and regulatory activities for any facility upgrades	
	Initial Operations: 1941	
Character-istics of Dam, Diversion, or Conduit	47-foot-high compact earthfill dam	
	Spillway elevation and hydraulic capacity: there is no spillway	
	Tailwater elevation: 2505 msl	
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse: Two 12' diameter, 358'-long Penstocks	
	Dates and types of major, generation-related infrastructure improvements: None since 2013	

	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)Power, Water Supply	
	The Water Source for the Johnson #1 Hydro Plant is Johnson Reservoir and impoundment built upon the Supply Canal to act as a regulating reservoir for the Johnson Canyon #1 Hydro Plant	
	Water discharge location or facility is the J1 Hydro Plant.	
	2,500 surface acre reservoir with a peak storage of 52,200 acre feet at maximum elevation of 2619.0 MSL	
Character-istics of Reservoir and Watershed	Maximum water surface elevation (ft. MSL): 2619.0 msl	
	Maximum and minimum water surface elevations: 2619.0 – 2617.2 msl.	
	Johnson Dam owned by the Central Nebraska Public Power and Irrigation District	
	Downstream dam(s) by name, ownership: The next structure on the Supply Canal is the Johnson Canyon #2 Hydro Plant.	
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	
	Area inside FERC project boundary, where appropriate: 2,914 Ac	
	Average annual flow at the dam: 647,875 Acre Feet	
Hydrologic Setting	Average monthly flows: 53,989 Acre feet	
	Location and name of relevant stream gauging stations above and below the facility: There are no relevant gauging stations as the reservoir is on the bypass canal.	
	Watershed area at the dam: 3,820 Ac.	
	There are two Zone of Effects. The upstream ZOE is Johnson Reservoir and the downstream ZOE is the Supply	

	Canal between the J1 Hydro and the J2 Hydro	
Designated Zones of Effect	Upstream and downstream locations by river miles	
	Type of waterbody (river, impoundment, by-passed reach, etc.) Impoundment	
	Delimiting structures: The Upstream Delimiting Structure is the Johnson Lake inlet. The J1 Hydro is the downstream delimiting structure for the Johnson Reservoir ZOE. Below the plant the dam acts as the upstream ZOE delimiting structure for the Supply Canal and the J2 Hydro is the downstream delimiting structure.	
	Designated uses by state water quality agency: Recreation, Aquatic Life, Agriculture Water Supply, and Aesthetics	
	See section VII. Contacts for the contact information for the local, state, and federal resource agencies	
Additional Contact Information	See section VII. Contacts for the contact information for the local non-governmental stakeholders	
	Photographs of the key structures associated with the J-1 Hydro Plant and the Zone of Effects are Figure #19 Johnson Reservoir and Figure #20 J1 Hydro Plant.	
Photographs and Maps	See Figure #19: Johnson Reservoir See Figure #20: Johnson #1 Hydro Plant	

IV.2 Standards Matrices for Johnson #1 Hydro Plant

IV.2.UZ.1 Matrix of Alternative Standards – Upstream Zone

Table IV-2. Facility Name: Johnson #1 Hydro Plant
Zone of Effect: #7 Johnson Reservoir

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**	***X***				
D	**Downstream Fish Passage**		***X***			
E	**Watershed and Shoreline Protection**		***X***			
F	**Threatened and Endangered Species Protection**	***X***				
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			***X***

IV.2.UZ.2 Ecological Flows Standards for Zone of Effect #7 Johnson Reservoir

The facility satisfies Standard A-1, Not Applicable/De Minimus Effect, in Zone 7.

Information Required to Support Ecological Flows Standards

Criterion	*Standard*	*Instructions*
A	1	<u>Not Applicable / De Minimis Effect:</u> • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located. • For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.

See Figure #20 in section IX.

- If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.

This is not a Run-of-River operation

- In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.

Johnson Reservoir is a part of the 75-mile conduit. The water source is the Supply Canal and water enters the reservoir at the Johnson Lake Inlet. While water may be released into the E67 Canal the vast majority of the water is discharged from the reservoir through the Johnson Canyon #1 Hydro Plant. Johnson Lake acts as a regulation reservoir for the Johnson Canyon #1 Hydro Plant. During the non-least tern and piping plover nesting season the upper and lower elevation limits for the reservoir are 2618.5 msl and 2617.2 msl. If an outage is planned the reservoir can be dropped much lower prior to the outage so that water can then refill the reservoir during the outage.

During the least tern and piping plover nesting season the maximum elevation is kept close to the 2617.2 msl minimum per Central's Flow Attenuation Plan ("Spike Flow Plan") to try and minimize potential flooding of least tern and piping plover nests that might be located downstream of the Johnson #2 River Return.

- For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

Johnson Reservoir was formed in 1941 when a dam was placed at the lower end of the canyon. Water enters the reservoir from the Supply Canal and then backs up the canyon. The water then exits the reservoir through the Johnson Canyon #1 Hydro. The reservoir is leased to the Nebraska Game and Parks Commission (as are all of Central's water resources) for recreational use and NGPC stocks the reservoir on a regular basis.

Supporting Documentation:

Hydrocycling Agreement
Flow Attenuation Plan
Fish Diversity Spreadsheet

IV.2.UZ.3 Water Quality Standards for Zone 7 Johnson Reservoir

The facility satisfies Standard B-2, Agency Recommendations, in Zone 7.

Information Required to Support Water Quality Standards.

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

- If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.

Johnson Reservoir is an impaired water body due to elevated chlorophyll due to total nitrogen and phosphorus. This is not due to any of Central's operations. See the NDEQ letter by Marty Link in section IX.

- Provide a copy of the most recent Water Quality Certificate, including the date of issuance.

See Supporting Documents.

- Identify any other agency recommendations related to water quality and explain their scientific or technical basis.

There are no agency recommendations related to water quality at Johnson Reservoir.

- Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

Not applicable as there are no agency recommendations for Johnson Reservoir.

Supporting Documentation

NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ 2018 Water Quality Integrated Report Draft
NDEQ Letter by Marty Link

IV.2.UZ.4 Upstream Fish Passage Standards for Zone #7 Johnson Reservoir

The facility satisfies Standard C-2, Agency Recommendation, in Zone 7.

Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

The Nebraska Game and Parks Commission manages the Johnson Reservoir for fish abundance and diversity. The fish are not able to move from the reservoir upstream and into the Supply Canal because the inlet drops the water 10 feet from the Supply Canal to the reservoir. However, this does not prevent the completion of any life cycle of any fish species of the reservoir.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.

See NGPC letter from Dave Tunink.

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

There are no provisions for fish passage upstream

Supporting Documentation

Fish Diversity Spreadsheet
NGPC letter by Dave Tunink

IV.2.UZ.5 Downstream Fish Passage Standards for Zone #7 Johnson Reservoir

Information Required to Support Downstream Fish Passage Standards.

Criterion	*Standard*	*Instructions*
D	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

Fish are restricted from downstream movement by the J-1 Hydro. There are no native species that cannot complete their lifecycle due to that restriction.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

See the NGPC letter by Dave Tunink in section IX.

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented

Not applicable as there are no provisions for fish passage downstream.

Supporting Documentation

Fish Diversity Spreadsheet
NGPC letter by Dave Tunink

IV.2.UZ.6 Shoreline and Watershed Protection Standards for Zone #7 Johnson Reservoir

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

- Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).

All the shoreline in the Johnson Reservoir area are protected through Central's Land and Shoreline Management Plan

- Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

There have been no findings of non-compliance with the Land and Shoreline Management Plan by FERC since the previous recertification in 2013.

Supporting Documentation

Land and Shoreline Management Plan

IV.2.UZ.7 Threatened and Endangered Species Standards for Zone #7 Johnson Reservoir

Information Required to Support Threatened and Endangered Species Standards.

Criterion	*Standard*	*Instructions*
F	1	Not Applicable / De Minimis Effect: • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

- Document that there are no listed species in the facility area or affected riverine zones upstream of the facility.

There are no listed species present in Johnson Reservoir. The American bald eagle does make use of the area and its presence is protected under Central's Land and Shoreline Management Plan.

- If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.

There have been no species extirpated from the reservoir or surrounding shoreline.

- If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken

Not applicable as no reintroduction efforts are being taken.

IV.2.UZ.8 Cultural and Historic Resources Standards for Zone #7 Johnson Reservoir

Information Required to Support Cultural and Historic Resources Standards.

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

The surrounding property owned and operated by Central is protected through Central's Cultural Resources Management Plan.

- Document that the facility is in compliance with all such plans

Any non-compliance issues are immediately reported to FERC and the State Historical Preservation Officer. No non-compliance issues have been reported since 2013.

Supporting Documentation

Cultural Resources Management Plan

IV.2.UZ.9 Recreational Resources Standards for Zone #7 Johnson Reservoir

The facility satisfies Standard H-2, Agency Recommendation, in Zone 7.

Information Required to Support Recreational Resources Standards.

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.

Central property located in the Zone of Effect is leased for recreational activities through a lease to the Nebraska Game and Parks Commission and they include public boat docks, camping facilities, a hike/bike trail, and swimming beach.

- Document that the facility is in compliance with all such recommendations and plans.

Operation of the recreational facilities by NGPC is in compliance with Central's Land and Shoreline Management Plan.

Supporting Documentation

Land and Shoreline Management Plan
NGPC Recreational Lease
Form 80 Recreational Reports for 2014

H	PLUS	Bonus Activities: • Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails). • Document that such new recreational opportunities did not create unmitigated impacts to other resources.

- Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails).

Central has been working with Johnson Lake Development Inc. (JLDI) to complete a 10-mile hike/bike trail. As a part of that effort by JLDI, Central constructed a bridge across the outlet canal of the reservoir and did the dirt preparation for the pouring of concrete for the trail. Presently the trail is approximately 90% completed and Central is working with JLDI on the possibility of constructing a similar bridge across the inlet canal to the Lake. See Figure #23.

- Document that such new recreational opportunities did not create unmitigated impacts to other resources.

The outlet bridge is right next to the highway bridge that crosses the canal and it does not hinder access to the lake by boats. Also, the outlet canal only continues for approximately 2,000 feet where the forebay to the J1 Hydro limits any further movement down the canal.

Supporting Documents

Central's *The Communicator* newsletter - Fall 2015

VII-A. Supply Canal from Johnson #1 to the Johnson #2 Hydro Plant

VII-A.1. Facility Description

Water from Johnson Reservoir (a.k.a. Johnson Lake) is released through the Johnson #1 Hydro Plant (J1 Hydro) located at Canal Mile 66.1. The water exits the plant though the tailrace and travels through the Supply Canal 5.7 miles to the Johnson #2 Hydro Plant (J2 Hydro).

Upstream of the J2 Hydro Forebay there is approximately 1,000 acre-feet of storage capacity. The regulation of the flow of water is through the release of water from the J1 Hydro upstream and the J2 Hydro downstream.

During the non-irrigation season (early September – June) water released from Johnson Reservoir passes through first the J1 Hydro and then the J2 Hydro and is then returned to the Platte River via the J2 River Return. During the irrigation season the water continues on in Central's irrigation system and no water is returned to the river unless a request is made by the Service to utilize Environmental Account water for in-stream use or to pass Natural Flow water downstream to meet senior water right holders.

VII-A.2. Standards Matrices for the Supply Canal from J1 Hydro to J2 Hydro

VII-A.2.1 Matrix of Alternative Standards – J1 Hydro to J2 Hydro Zone

Table VII-A-2. Facility Name: Supply Canal
Zone of Effect: J1 Hydro to J2 Hydro

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**		***X***			
D	**Downstream Fish Passage**		***X***			
E	**Watershed and Shoreline Protection**		***X***			
F	**Threatened and Endangered Species Protection**	***X***				
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			

VII-A.2.2 Ecological Flows Standards for Zone #7A J1 Hydro to J2 Hydro

The facility satisfies Standard A-1, Not Applicable/De Minimus Effect, in Zone 7A.

Information Required to Support Ecological Flows Standards

Criterion	*Standard*	*Instructions*
A	1	<u>Not Applicable / De Minimis Effect:</u> • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located. • For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.

This is not a powerhouse.

- If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.

This is not a Run-of-River operation

- In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.

The source of water is from the J1 Hydro, which is at the outlet of Johnson Lake. The discharge from this section of Supply Canal is through the J2 Hydro. See attachment, "LIHI Vicinity Map.pdf".

- For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

Not an impoundment

VII-A.2.DZ.3 Water Quality Standard for Zone #7A J1 Hydro to the J2 Hydro

The facility satisfies Standard B-2, Agency Recommendation, in Zone 7A.

Information Required to Support Water Quality Standards

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

- If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.

See NDEQ letter by Marty Link in section IX.

- Provide a copy of the most recent Water Quality Certificate, including the date of issuance.

See section IX. Supporting Information for the Nebraska Department of Environmental (NDEQ) 8-30-1988 Section 401 State Water Quality Certification.

- Identify any other agency recommendations related to water quality and explain their scientific or technical basis.

There are no other agency recommendations.

- Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations

Not applicable as there are no compliance activities required

Supporting Documentation:

NDEQ 2018 Water Quality Integrated Report Draft

NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ Letter by Marty Link

VII-A.2.4 Upstream Fish Passage Standards for Zone 7A Supply Canal from J1 Hydro to J2 Hydro

The facility satisfies Standard C-2, Agency Recommendation in Zone 7A.

Supporting Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

Fish are not able to move from this Supply Canal section because of the J1 Hydro. There are no native Platte River fish whose lifecycle is limited by the inability to move upstream from the Supply Canal.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

See NGPC letter by Dave Tunink in section IX.

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

There are no provisions for fish passage

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

VII-A.2.5 Downstream Fish Passage Standards for Zone #8 Platte River below J2 River Return

The facility satisfies Standard D-2, Agency Recommendation, in Zone 7A.

Information Required to Support Downstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
D	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.

- Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent).

Fish are restricted from downstream movement by the J2 Hydro. There are no native species that cannot complete their lifecycle due to that restriction. See NGPC letter from Dave Tunink.

- Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.

See the letter from Dave Tunink with the Nebraska Game and Parks Commission

- Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented

Not applicable

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

VII-A.2.6 Shoreline and Watershed Protection Standards for Zone #7A Supply Canal between the J1 Hydro and J2 Hydro

The facility satisfies Standard E-2, Agency Recommendation, in Zone 7A.

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

- Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).

All the shoreline in this stretch of the Supply Canal is protected through Central's Land and Shoreline Management Plan.

- Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

There have been no findings of non-compliance with the Land and Shoreline Management Plan by FERC since the previous recertification in 2013.

Supporting Documentation:

Land and Shoreline Management Plan

VII-A.2.7 Threatened and Endangered Species Standards for Zone #7A Supply Canal between the J1 Hydro and J2 Hydro

The facility satisfies Standard F-1, Not Applicable/DeMinimis, in Zone 7A.

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	1	Not Applicable / De Minimis Effect: • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

- Document that there are no listed species in the facility area or affected riverine zones upstream of the facility.

There are no listed species present in the Supply Canal between the J1 and J2 Hydros. There are American burying beetles (*Nicrophorus americanus*) present in the surrounding areas. This is both a federal and state listed species. The beetles are protected on CNPPID property through the Land and Shoreline Management Plan.

- If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.

Not applicable as there are no know listed species that were once present and are now gone.

- If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken

Not applicable as we are not reintroducing any species.

VII-A.2.8 Cultural and Historic Resources Standards for Zone #7A
Supply Canal from the J1 Hydro to J2 Hydro

The facility satisfies Standard G-2, Finding no Negative Effects, in Zone 7A.

Information Required to Support Cultural and Historic Resources Standards

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

Once again all lands owned and operated by Central have any and all cultural and historic resources protected under Central's Cultural and Historic Preservation Plan

- Document that the facility is in compliance with all such plans

Central reports all non-compliance issues immediately to the FERC and the State Historical Preservation Officer. There have been no non-compliance issues reported since 2013.

Supporting Documentation:

Cultural Resources Management Plan

VII-A.2.9 Recreational Resources Standards for Zone 7A – Supply Canal between the J1 Hydro and J2 Hydro

The facility satisfies Standard H-2, Agency Recommendation, in Zone 7A.

Information Required to Support Recreational Resources Standards

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.

There is a small area at the East Phillips Lake that is leased to the Nebraska Game and Parks. This area contains a public boat ramp which provides access to this Supply Canal section. The rest of the shoreline along the Supply Canal is not accessible. The recreational use is governed by the Land and Shoreline Management Plan.

- Document that the facility is in compliance with all such recommendations and plans.

There have been no findings of non-compliance with the Land and Shoreline Management Plan by FERC since the previous recertification in 2013.

Supporting Documentation: Land and Shoreline Management Plan

V. JOHNSON #2 HYDRO PLANT

V.1. Facility Description for Johnson #2 Hydro Plant

Water from Johnson Reservoir (a.k.a. Johnson Lake) is released through the Johnson #1 Hydro Plant (J1 Hydro) located at Canal Mile 66.1. The water exits the plant though the tailrace and travels through the Supply Canal 5.7 miles to the Johnson #2 Hydro Plant (J2 Hydro).

The J2 Hydro consists of a single 22,960 kW turbine and one 22,500 kW generator. Because it has only one turbine, there is a by-pass tube within the plant that can route water around the turbine during maintenance operations if necessary.

Upstream of the J2 Hydro Fore bay there is little if any storage capacity and regulation of the flow of water into the plant is through the release of water through the J1 Hydro upstream.

Water that passes through the turbine or bypass tube is released into the final 2.3 miles of the Supply Canal. At that point the water may continue into Central's Phelps County Canal to provide irrigation water to approximately 60,000 acres, or the water may be returned to the Platte River via the J2 River Return.

As stated in the Facility Description for the Johnson #1 Hydro Plant, there are two Zone of Effects (Zone or ZOE) associated with the Johnson Dam. The upstream ZOE is Johnson Reservoir and is described in Table IV-2 above.

The downstream Zone of Effect is the Johnson #2 River Return (J2 River Return) and Platte River from River mile 246.5 downstream 17 miles to the Kearney Diversion owned and operated by NPPD (Figure #3). [Note: Zone #8 is also described as "Platte River below J2 River Return".]

During the non-irrigation season (early September – June) water released from Johnson Reservoir passes through first the J1 Hydro and then the J2 Hydro and is then returned to the Platte River via the J2 River Return. During the irrigation season the water continues on in Central's irrigation system and no water is returned to the river unless a request is made by the Service to utilize Environmental Account water for in-stream use or to pass Natural Flow water downstream to meet senior water right holders.

I have reviewed the project description for P-1417 Kingsley Dam Project that is posted on the LIHI website and determined that it is an accurate representation of the subject facility. The information provided in this recertification application provides an update to support a new LIHI certification.

Table V-1. Information Required for the Project Description – Johnson #2 Hydro Plant

Information Type	*Variable Description*	*Response(and reference to further details)*
Name of the Facility	Johnson #2 Hydro Plant (J2 Hydro) FERC # 1417	
Location	Supply Canal	
	Platte River Basin	
	Lexington, Dawson County, Nebraska	
	River mile of dam above next major river	
	40* 40' 51" North Latitude	
	99* 44' 51" West Longitude	
Facility Owner	Don Kraus, General Manager	
	The Central Nebraska Public Power and Irrigation District	
	Representative in LIHI certification: Eric Hixson, Engineering Services Manager.	
	FERC Project Number 1417 (Kingsley Dam Project), License issued July 29, 1998 and expires on June 30, 2038	
Regulatory Status	FERC license type or special classification (e.g., "qualified conduit")	
	Water Quality Certificate identifier and issuance date, plus source agency name	
	See section IX. Supporting Information for supporting documents referenced in this application	
	Initial Operations: 1941	
Power Plant Character-istics	22.5 MW	
	Average annual generation (MWh) 10-year average: 98,872 MWh	
	A single 22,960 kW turbine and one 22,500 kW generator with an installed capacity of 22,500 kW	
	Modes of operation: this is a "run-of-canal" operation as there is no storage reservoir associated with this Hydro and flow is controlled by releases from Johnson Lake through the J1 Hydro.	

	Dates and types of major equipment upgrades: None since 2013	
	Dates, purpose, and type of any recent operational changes: None	
	Plans, authorization, and regulatory activities for any facility upgrades: None	
	This plant began operations in 1941	
Characteristics of Dam, Diversion, or Conduit	Dam height: There is not dam.	
	Spillway elevation and hydraulic capacity: There is no spillway	
	Tailwater elevation: 2361 msl	
	A 1,054-foot-long, 14-foot-diameter steel penstock connected to a 46-foot-high surge tank	
	Dates and types of major, generation-related infrastructure improvements: None since 2013	
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.) Power and Water supply	
	The water supply is the Supply Canal and Johnson Lake	
	Water discharge location or facility: Not applicable	
	Gross volume and surface area at full pool: Not applicable	
Characteristics of Reservoir and Watershed	Maximum water surface elevation (ft. MSL): This is not a reservoir.	
	Maximum and minimum volume and water surface elevations for designated power pool, if available: Not applicable	
	The Upstream dam(s) for J2 is the Johnson Lake Dam on the Supply Canal owned and operated by Central FERC Project 1417.	
	The next Dam downstream of the J2 plant is the Kearney Diversion Dam, river mile 218.5 owned and operated by the Nebraska Public Power District.	
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	

	Area inside FERC project boundary, where appropriate: 581 Ac	
	Average annual flow at the dam: 630,720 Acre/feet	
Hydrologic Setting	Average monthly flows: 52,560 Acre/Feet	
	Location and name of relevant stream gauging stations above and below the facility: Downstream of the J2 River Return is the Platte River at Overton: Station #676800	
	Watershed area at the dam: 2,875 Ac	
	There is a single Zone of Effect associated with the J2 Plant. The ZOE is downstream of the tailrace of the downstream to the J2 River Return where the water is returned to the Platte River and then down the Platte River to the Kearney Diversion Dam.	
Designated Zones of Effect	Upstream is the J2 Plant at Canal Mile 71.8. The J2 River Return joins the Platte River at Canal Mile 75.5, River Mile 246.5, and Kearney Diversion Dam, the downstream location, is at River Mile 218.5.	
	The downstream Zone of Effect is a river	
	The upstream delimitating structure is the J2 tailrace located at Canal Mile 71.8. The downstream delimiting structure is the Kearney Diversion Dam	
	Designated uses by state water quality agency: Recreation, Aquatic Life, Agriculture Water Supply, Industrial Water Supply, and Aesthetics	
	See section VII. Contacts for the contact information for the local, state, and federal resource agencies	
Additional Contact Information	See section VII. Contacts for the contact information for the local non-governmental stakeholders	

Photo-graphs and Maps	See Figure #21: Johnson Canyon Hydro #2 Figure #22: J2 River Return and Platt River	

V.2. Standards Matrices for Johnson #2 Hydro Plant

V.2.DZ.1 Matrix of Alternative Standards – Downstream Zone

Table V-2. Facility Name: Johnson #2 Hydro Plant
Zone of Effect: #8 Johnson #2 River Return and Platte River from River Mile 246.5 to River Mile 218.5 (a.k.a. Platte River below J2 River Return)

		Alternative Standards				
	Criterion	***1***	***2***	***3***	***4***	***Plus***
A	**Ecological Flow Regimes**	***X***				
B	**Water Quality**		***X***			
C	**Upstream Fish Passage**		***X***			
D	**Downstream Fish Passage**	***X***				
E	**Watershed and Shoreline Protection**		***X***			
F	**Threatened and Endangered Species Protection**			***X***		
G	**Cultural and Historic Resources Protection**		***X***			
H	**Recreational Resources**		***X***			***X***

V.2.DZ.2 Ecological Flows Standards for Zone #8 Platte River below J2 River Return

The facility satisfies Standard A-1, Not Applicable/De Minimus Effect, in Zone 8.

Information Required to Support Ecological Flows Standards

Criterion	***Standard***	***Instructions***
A	1	<u>Not Applicable / De Minimis Effect:</u> • Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility. • If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained. • In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located. • For impoundment zones only, explain how fish and wildlife habitat

within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

- Confirm the location of the powerhouse relative to other dam/diversion structures to establish that there are no bypassed reaches at the facility.

See Figure #21 in section IX.

- If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.

This is not a Run-of-River operation

- In a conduit project, identify the water source and discharge points for the conduit system within which the hydropower plant is located.

The J2 River Return is the lower end of the 75-mile Supply Canal which is a conduit project. The source of water for the J2 River Return is the tailrace of the J2 Hydro that dumps into the Supply Canal. During the irrigation season there is little or no water returned to the Platte River at the J2 River Return unless downstream natural flow rights are called for or the U.S. Fish and Wildlife Service requests water from the Environmental Account in Lake McConaughy be released to provide in stream flows.

- For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – ***NOTE:*** this is required information, but it will not be used to determine whether the Ecological Flows criterion has been satisfied. All impoundment zones can apply Criterion A-1 to pass this criterion.

Not an impoundment

Supporting Documentation

2018 Environmental Account Operating Plan
Hydrocycling Agreement

V.2.DZ.3 Water Quality Standard for Zone #8 Platte River below J2 River Return

The facility satisfies Standard B-2, Agency Recommendation, in Zone 8.

Information Required to Support Water Quality Standards

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

- If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.

See NDEQ letter by Marty Link in section IX.

- Provide a copy of the most recent Water Quality Certificate, including the date of issuance.

See section IX. Supporting Information for the Nebraska Department of Environmental (NDEQ) 8-30-1988 Section 401 State Water Quality Certification.

- Identify any other agency recommendations related to water quality and explain their scientific or technical basis.

There are no other agency recommendations.

- Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations

Not applicable as there are no compliance activities required

Supporting Documentation:

NDEQ 2018 Water Quality Integrated Report Draft
NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ Letter by Marty Link

V.2.DZ.4 Upstream Fish Passage Standards for Zone 8 Platte River below J2 River Return

The facility satisfies Standard C-1, Not Applicable/DE Minimis Effect, in Zone 8.

Information Required to Support Upstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
C	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. • Document available fish distribution data and the lack of migratory fish species in the vicinity. If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

- Explain why the facility does not impose a barrier to upstream fish passage in the designated zone.

The J2 River Return does impose a barrier to fish moving from the Platte River into the Supply Canal below the J2 tailrace however; the Return does not impose a barrier to the upstream movement of fish in the Platte River itself.

There are no species of fish that cannot complete their life cycle because of the restriction of moving from the Platte River upstream into the Supply Canal.

- Document available fish distribution data and the lack of migratory fish species in the vicinity.

See fish species composition of the Supply Canal and the Platte River.

- If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

Not applicable as no species have been extirpated from the area.

Supporting Documentation:

Fish Diversity Spreadsheet
NGPC Letter by Dave Tunink

V.2.DZ.5 Downstream Fish Passage Standards for Zone #8 Platte River below J2 River Return

The facility satisfies Standard D-1, Not Applicable/DE Minimis Effect, in Zone 8.

Information Required to Support Downstream Fish Passage Standards

Criterion	*Standard*	*Instructions*
D	1	Not Applicable / De Minimis Effect: • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

- Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).

The downstream delimiting structure, the Kearney Diversion, is not owned or operated by Central. It is owned and operated by the Nebraska Public Power District.

The J2 River Return below the J2 tailrace does not prevent any movement of fish, upstream or downstream in the Platte River itself.

- For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.

Not Applicable as the structure is owned by a different entity.

- Document available fish distribution data and the lack of migratory fish species in the vicinity.

See fish species composition in Fish Diversity Spreadsheet in section IX.

- If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

Not applicable as the structure is not owned by Central.

Supporting Documentation:

Fish Diversity Spreadsheet
Letter from NGPC Dave Tunink

V.2.DZ.6 Shoreline and Watershed Protection Standards for Zone #8 Platte River below J2 River Return

The facility satisfies Standard E-2, Agency Recommendation, in Zone 8.

Information Required to Support Shoreline and Watershed Protection Standards

Criterion	*Standard*	*Instructions*
E	2	Agency Recommendation: • Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans). • Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

- Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility (e.g., Shoreline Management Plans).

Downstream of the J2 River Return from River Mile 246.5 to River Mile 237.5 the shoreline on one side of the river is owned and operated by Central and is managed and protected under Central's Long-Term Enhancement and Maintenance Plan for the Jeffrey Island Habitat Area (Jeffrey Island Long-Term Enhancement and Maintenance Plan). In addition, the Platte River Recovery Implementation Program (Program) and the Nebraska Public Power District own and manage lands along the Platte River in this Zone of Effect. The Program lands and NPPD's lands are also managed and protected under similar plans.

- Provide documentation that indicates the facility is in full compliance with any agency recommendations or management plans that are in effect.

See the 2017 Jeffrey Island Annual Status Report in section IX.

Supporting Documentation:

Jeffrey Island Long-Term Enhancement and Maintenance Plan
2017 Jeffrey Island Annual Status Report

V.2.DZ.7 Threatened and Endangered Species Standards for Zone #8 Platte River below J2 River Return

The facility satisfies Standard F-2, Finding no Negative Effects, in Zone 8.

Information Required to Support Threatened and Endangered Species Standards

Criterion	*Standard*	*Instructions*
F	2	Finding of No Negative Effects: • Identify all listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies. • Provide documentation of a finding of no negative effect of the facility on any listed species in the area from an appropriate natural resource management agency.

Finding of No Negative Effects:

- Identify all listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies.

This portion of the Platte River lies in the stretch of the river designated by the U.S. Fish and Wildlife Service as Critical Habitat for the endangered whooping crane (*Grus americanus*). Also present during the summer are foraging least terns and piping plovers

- Provide documentation of a finding of no negative effect of the facility on any listed species in the area from an appropriate natural resource management agency.

Central owns and manages 4,100 acres in this area as habitat for the three listed species present. In addition, Central is very active within the Platte River Recovery Implementation Program, a three-state and federal program designed to aid in the recovery of all three species by providing both instream flows via the Environmental Account in Lake McConaughy and an additional 10,000 acres of habitat, approximately 4,000 of which are found in this stretch of the river. Central's Jeffrey Island Habitat Area and the Program's lands comprise almost 8,000 acres of protected habitat within the Zone of Effect.

Supporting Documentation:

Jeffrey Island Long-Term Enhancement and Maintenance Plan
2017 Jeffrey Island Annual Status Report
Platter River Recovery Implementation Program 2017 Interior Least Tern and Piping Plover Monitoring and Research Report, Central Platte River, Nebraska (PRRIP 2017 Tern and Plover Report for the Central Platte River)

V.2.DZ.8 Cultural and Historic Resources Standards for Zone #8 Platte River below J2 River Return

The facility satisfies Standard G-2, Finding no Negative Effects, in Zone 8.

Information Required to Support Cultural and Historic Resources Standards

Criterion	*Standard*	*Instructions*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

- Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.

Once again all lands owned and operated by Central have any and all cultural and historic resources protected under Central's Cultural and Historic Preservation Plan

- Document that the facility is in compliance with all such plans

Central reports all non-compliance issues immediately to the FERC and the State Historical Preservation Officer. There have been no non-compliance issues reported since 2013.

Supporting Documentation:

Cultural Resources Management Plan

V.2.DZ.9 Recreational Resources Standards for Zone 8 Platte River below J2 River Return

The facility satisfies Standard H-2, Agency Recommendation, in Zone 8.

Information Required to Support Recreational Resources Standards

Criterion	*Standard*	*Instructions*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

- Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations.

Central property located in the Zone of Effect does allow recreation and that recreation is enforced through the Jeffrey Island Management Plan, a Management Plan developed in conjunction with the U.S. Fish and Wildlife Service and the Nebraska Game and Parks Commission. Recreation on Program land or on NPPD's lands are controlled by similar management plans.

- Document that the facility is in compliance with all such recommendations and plans.

Central monitors compliance with the Jeffrey Island Long-Term Enhancement and Maintenance Plan. Any non-compliance issues are reported to FERC, the Nebraska Game and Parks Commission, and the U.S. Fish and Wildlife Service. There have been no findings of non-compliance with the Land and Shoreline Management Plan since the previous recertification in 2013.

Supporting Documentation:

Jeffrey Island Long-Term Enhancement and Maintenance Plan
2017 Jeffrey Island Annual Status Report

H	PLUS	Bonus Activities: • Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails). • Document that such new recreational opportunities did not create unmitigated impacts to other resources.

- Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails).

Central allows hunting, fishing hiking, horseback riding, camping, bird watching, mushroom hunting, and other non-invasive forms of recreation on the 4,000+ acres of the Jeffrey Island Habitat Area as long as there are no endangered species present.

Multiple trail riding clubs use the 7-mile long, mostly fence free property for weekly trail rides or special annual events such as the Pony Express annual re-ride.

- Document that such new recreational opportunities did not create unmitigated impacts to other resources.

Central personnel monitor all the activities occurring on the property and there have been no instances of unmitigated impacts since 2013.

Supporting Documents:

Jeffrey Island Long Term Enhancement and Maintenance Plan:
Section 5 Management of Recreation and Education Activities

VI. SWORN STATEMENT AND WAIVER

Sworn Statement and Waiver Form

All applications for LIHI Certification must include the following sworn statement before they can be reviewed by LIHI:

SWORN STATEMENT

As an Authorized Representative of The Central Nebraska Pubic Power and Irrigation District, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's Certification Program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The undersigned further acknowledges that if certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified.

The undersigned Applicant further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's Certification Program.

PLEASE INSERT ONLY FOR PRE-OPERATIONAL CERTIFICATIONS (See Section 4.5.3): For applications for pre-operational certification of a "new" facility the applicant must also acknowledge that the Institute may suspend or revoke the certification should the impacts of the project, once operational, fail to comply with the certification criteria.

Company Name: The Central Nebraska Pubic Power and Irrigation District
Authorize Representative Name: Eric Hixson Title Engineering Services Manager

Eric R. Hixson

State of Nebraska)
County of Phelps)
On this, the 29 day of June, 2018, before me a notary public, the undersigned officer, personally appeared Eric Hixson, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained. In witness hereof, I hereunto set my hand and official seal.

Notary Public Emily J. Anderson

GENERAL NOTARY - State of Nebraska
EMILY J. ANDERSON
My Comm. Exp. May 13, 2021

VII. Contacts

FACILITY CONTACTS FORM

1. **All applications for LIHI Certification must include complete contact information to be reviewed.**

Project Owner:	
Name and Title	Don D. Kraus, General Manager
Company	Central Nebraska Public Power & Irrigation District
Phone	(308) 995 – 3541
Email Address	dkraus@cnppid.com
Mailing Address	PO Box 740, Holdrege, NE 68949-0740
Project Operator (if different from Owner):	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Consulting Firm / Agent for LIHI Program (if different from above):	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	Eric Hixson, Eng. Services Mgr.
Company	Central Nebraska Public Power & Irrigation District
Phone	(308) 995 – 3554
Email Address	ehixson@cnppid.com
Mailing Address	PO Box 740, Holdrege, NE 68949-0740
Party responsible for accounts payable:	
Name and Title	Rochelle Jurgens, Controller
Company	Central Nebraska Public Power & Irrigation District
Phone	(308) 995 - 3549
Email Address	rjurgens@cnppid.com
Mailing Address	PO Box 740, Holdrege, NE 68949-0740

2. **Applicant must identify the most current and relevant state, federal, provincial, and tribal resource agency contacts (copy and repeat the following table as needed).**

Agency Contact (Check area of responsibility: Flows_X_, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation _X_):	
Agency Name	Nebraska Game and Parks
Name and Title	Tim McCoy, Deputy Director
Phone	(402) 471 - 5539
Email address	tim.mccoy@nebraska.gov
Mailing Address	2200 N. 33rd Street, Lincoln, NE 68503

Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Nebraska Game and Parks
Name and Title	Dave Tunink, Assistant Fisheries Administrator
Phone	(402) 471 – 5553
Email address	dave.tunink@nebraska.gov
Mailing Address	2200 N. 33rd Street, Lincoln, NE 68503

Agency Contact (Check area of responsibility: Flows__, Water Quality _X_, Fish/Wildlife Resources __, Watersheds _X_, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	Nebraska Department of Environmental Quality
Name and Title	Marty Link, Water Quality Division Administrator
Phone	(402) 471 - 2186
Email address	marty.link@nebraska.gov
Mailing Address	PO Box 98922, Lincoln, NE 68509-8922

Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources _X_, Recreation __):	
Agency Name	Nebraska State Historical Society - State Historic Preservation Office
Name and Title	John Rissetto, SHPO Archeologist
Phone	(402) 471 -2609
Email address	John.Rissetto@nebraska.gov
Mailing Address	1500 R Street, Lincoln, NE 68508-1651

Agency Contact (Check area of responsibility: Flows_X_, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Agency Name	U.S. Fish and Wildlife Service
Name and Title	Eliza Hines, Field Supervisor, Platte River Recovery Team, EA Account Mgr.
Phone	(308) 382 – 6468
Email address	Eliza_Hines@fws.gov
Mailing Address	9325 South Alda Road, Wood River, NE 68883

Agency Contact (Check area of responsibility: Flows_X_, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Agency Name	The Nature Conservancy
Name and Title	Rich Walters, Director of Stewardship for the Nebraska Program
Phone	(402) 722 - 4440
Email address	rwalters@tnc.org
Mailing Address	42269 Morel Road , Johnstown, NE 69214

Non-Agency Contact (Check area of responsibility: Flows_X_, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Non-Agency Name	Platte River Recovery Implementation Program
Name and Title	Jason Farnsworth, Executive Director
Phone	(308) 237 - 5728
Email address	farnsworthj@headwaterscorp.com
Mailing Address	4111 4th Avenue, Suite 6, Kearney, NE 68845

Non-Agency Contact (Check area of responsibility: Flows_X_, Water Quality __, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Non-Agency Name	Nebraska Public Power District
Name and Title	John Shadle, Water Resource Advisor
Phone	(402) 563 - 5489
Email address	jjshadl@nppd.com
Mailing Address	PO Box 499, Columbus, NE 68602

Non-Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. _X_, Cultural/Historic Resources __, Recreation __):	
Non-Agency Name	Audubon
Name and Title	Bill Taddicken, Interim Director of Audubon Nebraska
Phone	(308) 468 – 5282
Email address	btaddicken@audubon.org
Mailing Address	44450 Elm Island Rd, Gibbon, NE 68840

VIII. Figures

Figure #1
Zones of Effect (Drawing of Zones #1 and #2)

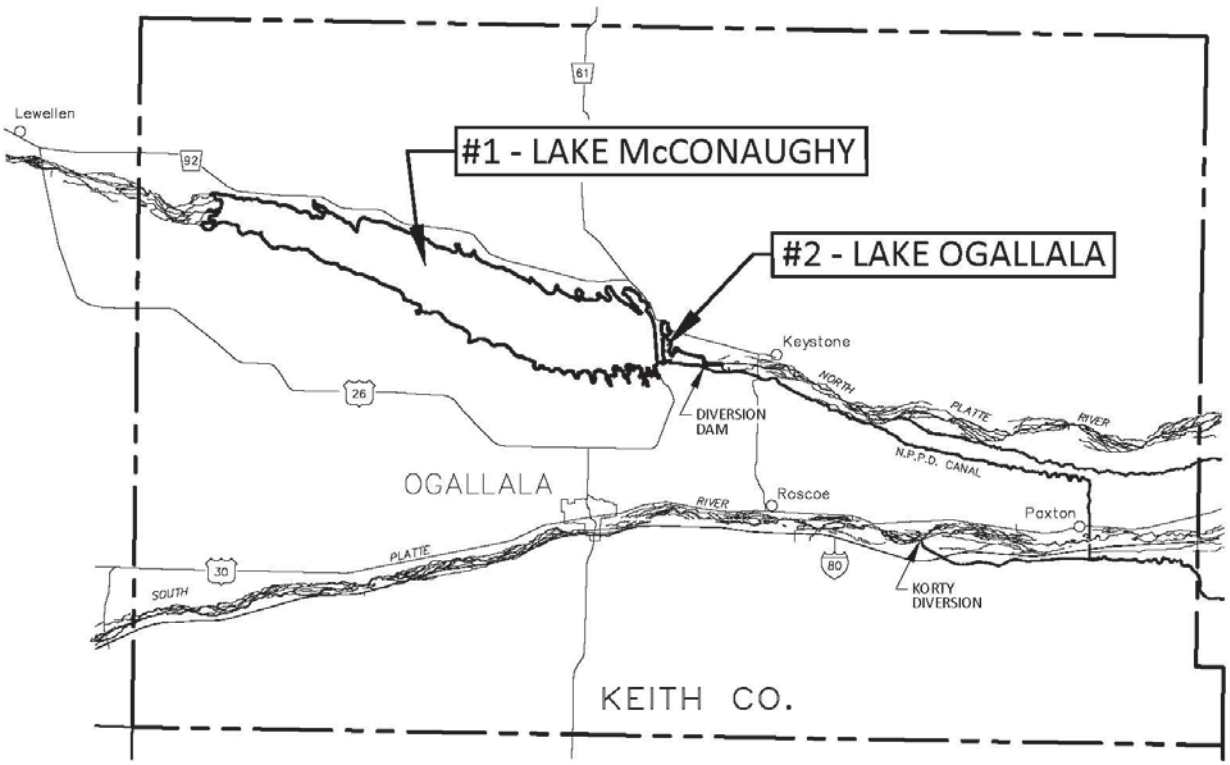

Figure 1 - Zones of Effects

Figure #2
Zones of Effect (Drawing of Zones #3, #4, #5 and #6)

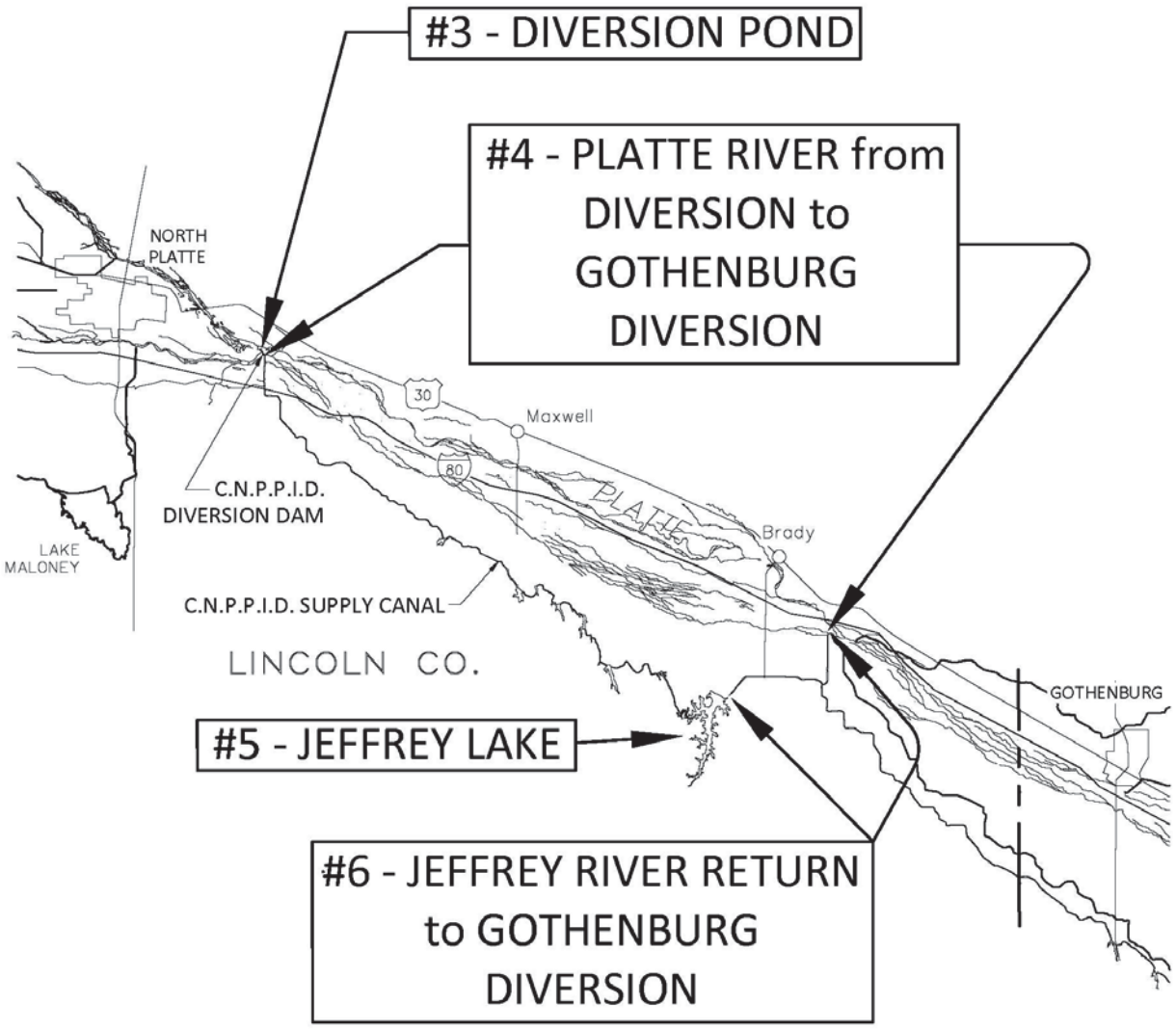

Figure 2 - Zones of Effects

Figure #3
Zones of Effect (Drawing of Zones #7 and #8)

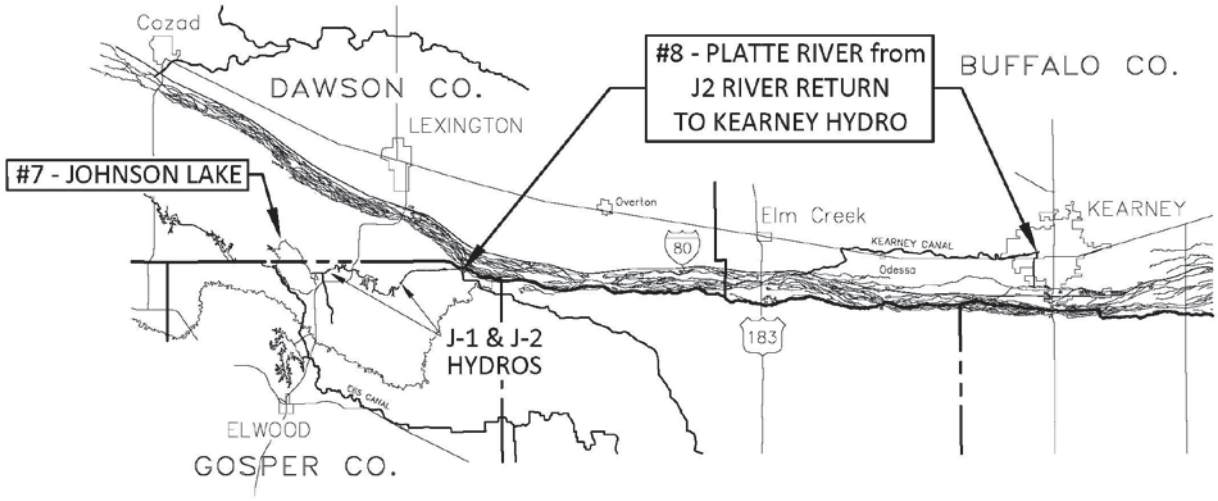

Figure 3 - Zones of Effects

Figure #4
Zones of Effect upstream and downstream of Kingsley Dam

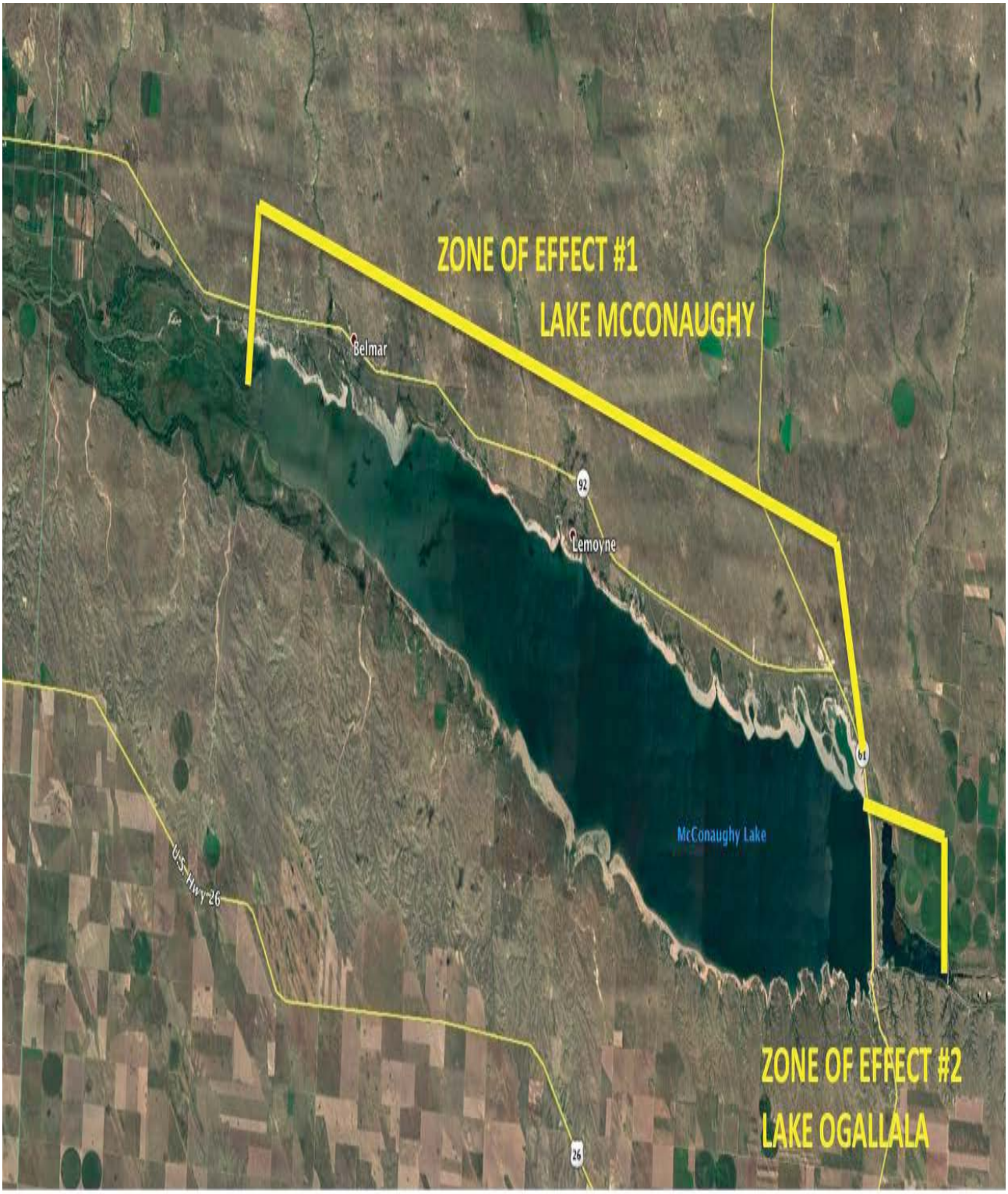

Figure #5
Kingsley Hydro Plant

Figure #6

Upstream delimitation for Zone of Effect #1.
The mouth of the North Platte River as it enters Lake McConaughy.

Figure #7

**Kingsley Dam forming Lake McConaughy,
the downstream delimitation for Zone of Effect #1
and the upstream delimitation for Zone of Effect #2.**

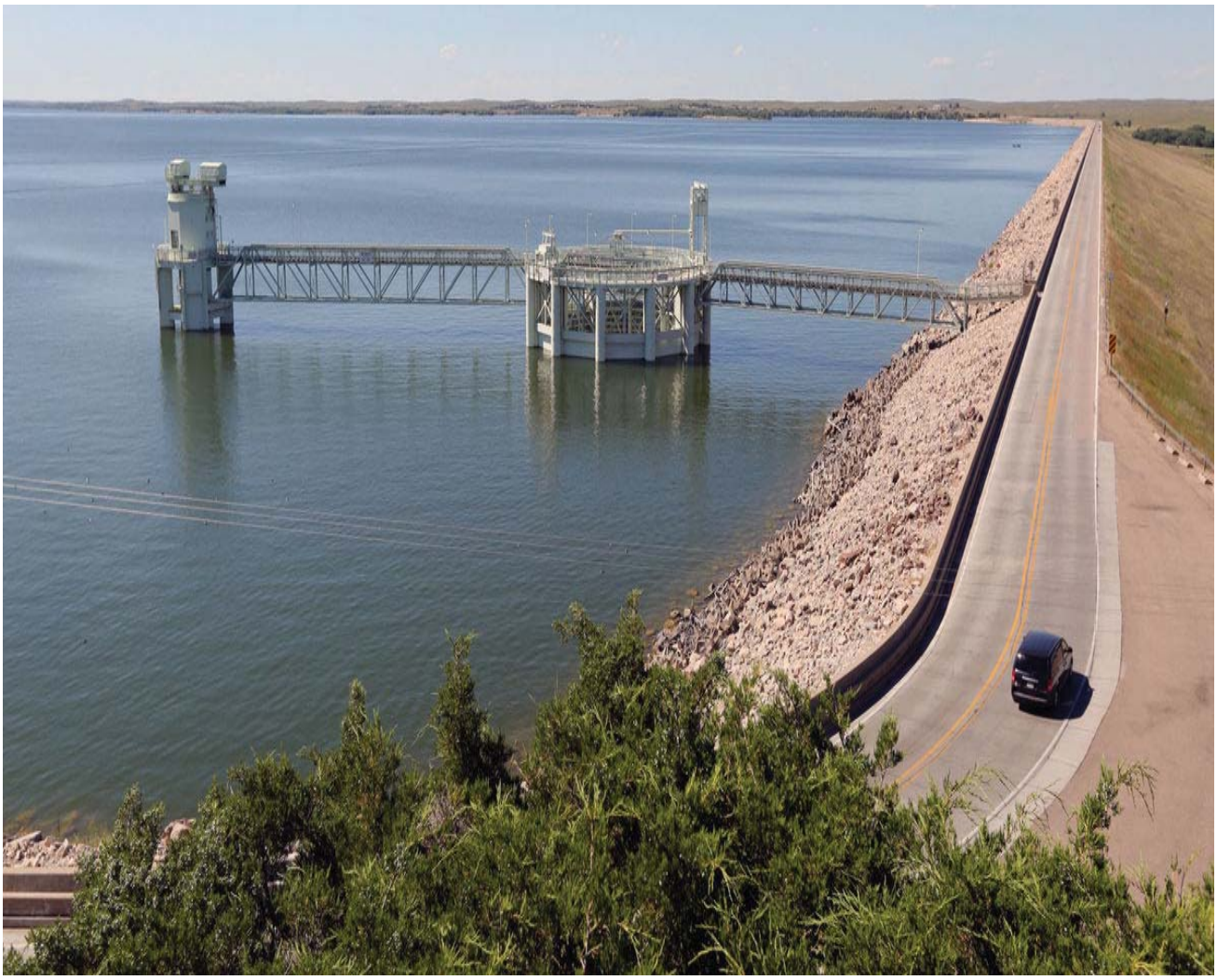

Figure #8
Keystone Diversion Dam

Figure #9
Kingsley Dam and Kingsley Hydro Plant

Figure #10
Keystone Diversion Dam

Figure #11
Central Diversion Dam

Figure #12
Central Diversion Dam

Figure #13
Tern and Plover Habitat Area

Figure #14
Jeffrey Dam and Jeffrey Hydro Plant

Figure #15
Jeffrey Hydro Plant

Figure #16
Jeffrey Reservoir (a.k.a. Jeffrey Lake)

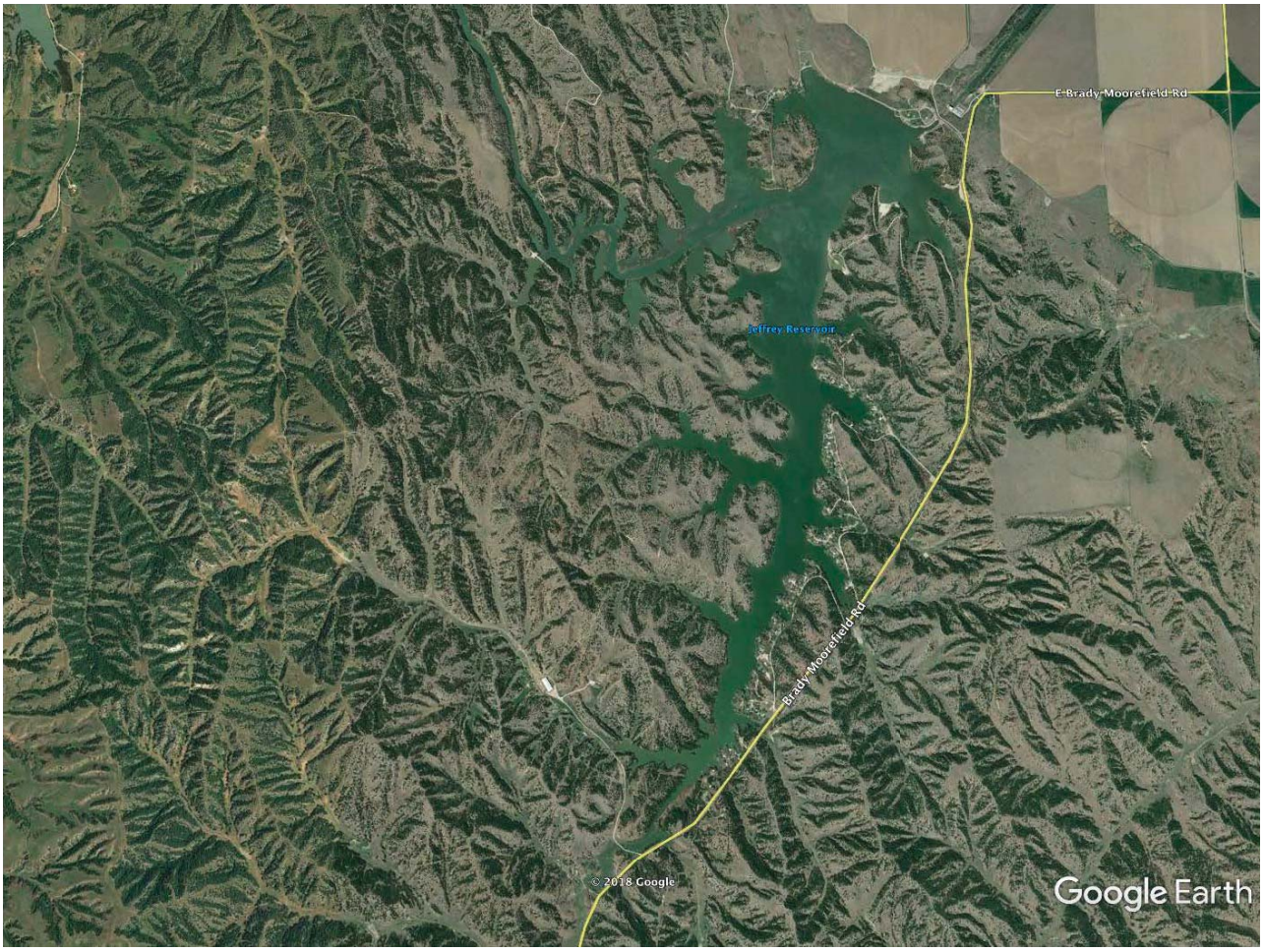

Figure #17

Central Double Check Gate, Jeffrey Hydro River Return, and Gothenburg Diversion Dam

Figure #18
Central Double Check Gate

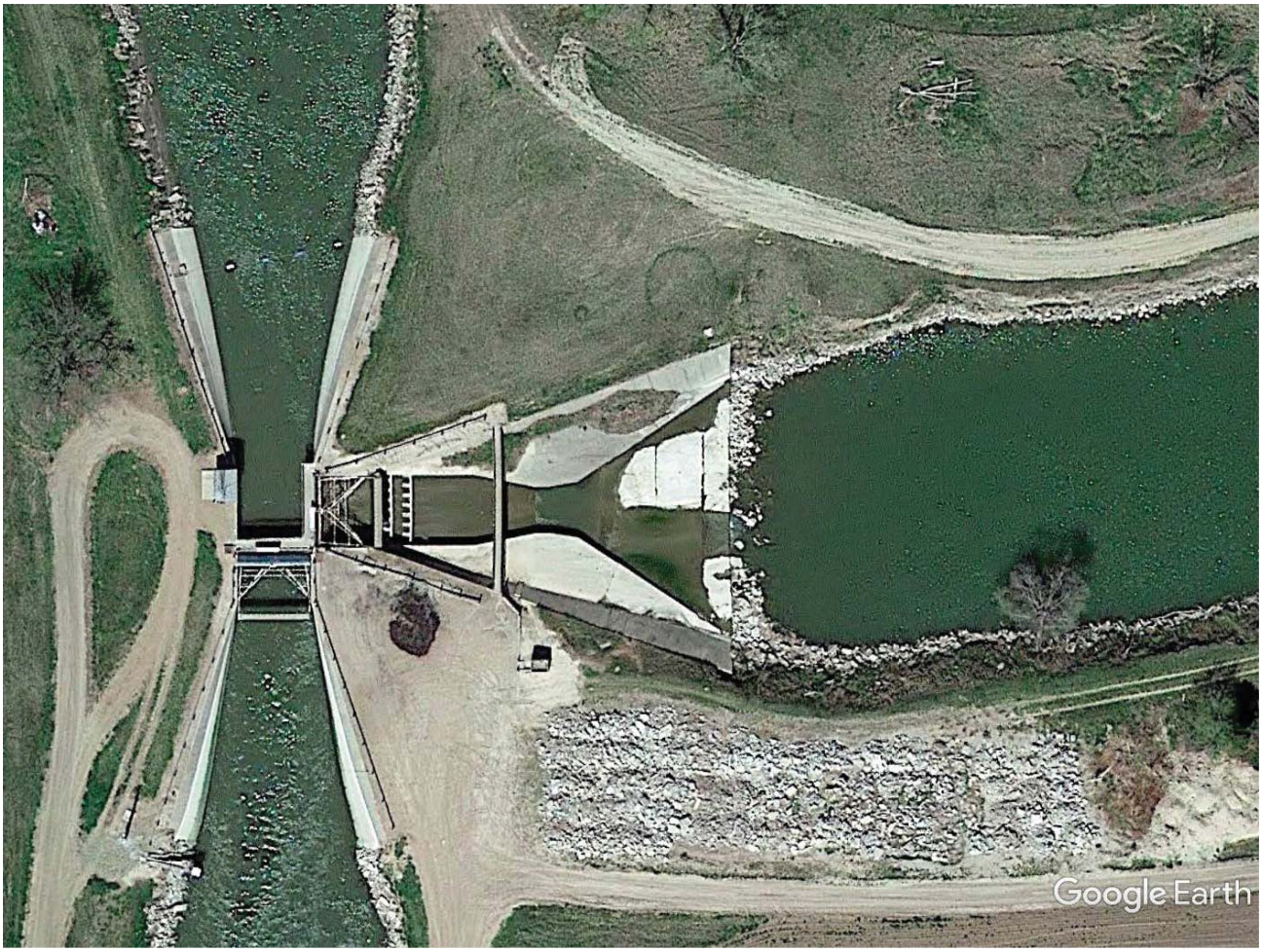

Figure #19
Johnson Reservoir (a.k.a. Johnson Lake)

Figure #20
Johnson #1 Hydro Plant

Figure #21
Johnson #2 Hydro Plant

Figure #22

Johnson #2 Hydro Plant,
J2 River Return,
and Platte River

Figure #23

New Hike/Bike Trail Bridge across the Outlet of Johnson Reservoir

IX. SUPPORTING INFORMATION

NOTE: For the numerous supporting documents, see the "LIHI 2018 Recertification Application – IX Supporting Information" folder that is separate from the "LIHI 2018 Recertification Application (except IX Supporting Information)" file. They are on the same USB flash drive.

The *IX. Supporting Information* folder contains the subfolders as listed below:

IX Supporting Information

Cultural Resources
- Cultural Resources Management Plan

Endangered Species
- Management Plan for Tern and Plover Habitat Along the Platte River
- PRRIP 2017 Tern and Plover Report for the Central Platte River
- Tern and Plover Nest Monitoring Annual Report for 2017
- Three-Year Endangered Species Reevaluation Report for Period Ending 2017

Fish
- Fish Diversity Spreadsheet
- NGPC Letter by Dave Tunink

[NOTE: The Nebraska Game and Parks Commission was in the process of finalizing this letter when Central submitted this recertification application. Central will provide this letter to LIHI when it is received from NGPC.]

Flows
- 2018 Environmental Account Operating Plan
- Environmental Account (Exhibit X of the 1998 FERC License)
- FERC 1998 License for Central
- Flow Attenuation Plan
- Hydrocycling Agreement

Jeffrey Island
- 2017 Jeffrey Island Annual Status Report (except Appendices)
- 2017 Jeffrey Island Annual Status Report – Appendix A 2017 Grazing Activity & 2018 Grazing Goals
- 2017 Jeffrey Island Annual Status Report – Appendix A JIHI Management Units 2018 Grazing Seasons
- Jeffrey Island Long-Term Enhancement and Maintenance Plan

Land and Shoreline Management

LSMP (Except Appendix C)

FERC 4-11-2014 Order Modifying and Approving Revised Dec 2009 LSMP
P1417 2009 Revised LSMP 12-7-2009
P1417 2009 Revised LSMP submittal letter to FERC

Appendix C (Tern and Plover)

FERC 2-25-2011 letter approving Appendix C 3-9-2010 Revised T & P Plan
P1417 2010 Revised Tern & Plover Nesting Plan
P1417 2010 Revised Tern & Plover Plan submittal letter

LIHI 2013 Recertification Review

LIHI Recertification Review for Kingsley Dam Project – Gary Franc 9-18-2013

Recreation

Central's *The Communicator* newsletter – Fall 2015
NGPC Lake McConaughy Recreation Area Lease Agreement
NGPC Master Plan for Lake McConaughy and Lake Ogallala
NGPC Recreational Lease
Public Education Activities Annual Report (4-14-2018)

Form 80 Recreational Reports for 2014

P-1417 3-30-2015 Submittal Letter for 4 Form 80 Reports
P-1417 Kingsley Dam (Kingsley Hydro Powerhouse)
P-1417 Supply Canal (Jeffrey Hydro Powerhouse)
P-1417 Supply Canal (Johnson No. 1 Hydro Powerhouse)
P-1417 Supply Canal (Johnson No. 2 Hydro Powerhouse)

Water Quality

Lake Ogallala Bathometric Project Mitigation Report 2015
Lake Ogallala Water Quality Modeling to Support DO TMDL Determination 2004
Lake Ogallala Water Quality Report 2013
NDEQ 8-30-1988 Section 401 State Water Quality Certification
NDEQ 2007 Total Maximum Daily Load for Lake Ogallala
NDEQ 2018 Water Quality Integrated Report Draft
NDEQ Letter by Marty Link
USACE Permit to Dredge Upstream of Central Diversion Dam