



CENTRAL

Nebraska Public Power
and Irrigation District

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FEDERAL ENERGY
REGULATORY COMMISSION

July 24, 2000

Mr. David Boergers
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: The Central Nebraska Public Power and Irrigation District, Project No. 1417
Article 412

Enclosed please find eight copies of The Central Nebraska Public Power and Irrigation District's (Central's) Flow Attenuation Plan (Plan) for the above captioned project. Under Article 412 of its license, Central is required to use its best efforts to attenuate increased flows in the Platte River which might occur because of rejection of irrigation water due to regional or local weather conditions during the June 1 to August 15 nesting season of least terns and piping plovers.

Article 412 requires that, in developing the Flow Attenuation Plan, Central consider, among other things, modifying irrigation season operations to create limited temporary capacity in Johnson Lake and increasing deliveries to Rainwater Basin wetlands which hold valid state water rights or which acquire them subsequent to the date of the plan and which can be served by Central. The enclosed Plan focuses heavily on the creation of limited temporary capacity in Johnson Lake and pumping into Elwood Reservoir. In determining that this approach represents Central's "best efforts" to attenuate flows, Central examined a wide variety of system features and operational alternatives that did not prove fruitful and are not reflected in the Plan.

The license article also requires Central to consult with the U.S. Fish and Wildlife Service and the Nebraska Game and Parks Commission. Central has worked with both agencies closely in the development of this plan and the agencies' letters of concurrence are attached.

A. Background

The concern prompting Article 412 is that terns and plovers build their nests near the water line. If later flows are higher than flows when nests were built, the nests are flooded and eggs and chicks may be lost. Typically, flows are less in the summer than in the spring, and the nests are located further from the river level in the summer.

Increasing summer flows in the central Platte River – sometimes called "spike flows" -- result when it rains somewhere in the drainage system downstream from where rainfall could be

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captured and stored. The water making up these higher flows may be from:

- rain falling on the river
- rainfall runoff draining to the river
- natural flow that was passed through or storage water that was released from Lake McConaughy for independent canals which then do not take the flows because they do not need irrigation water
- return flows from Central's system or other systems along the river.

The return flows from Central's system during or after a rainfall event include rain falling on the canal system, rainfall draining into system lakes and canals from the surrounding area, water released from or passed through Lake McConaughy for irrigation that is not diverted into the distribution canals because they are full, and water released from Lake McConaughy from the Environmental Account.

B. Scope of Efforts to Identify Potential Opportunities to Attenuate Return Flows

In developing the Flow Attenuation Plan, Central explored using each major component of its system:

Project Facilities

- Lake McConaughy, Central's principle impoundment.
- Central Supply Canal, a 75-mile long west to east canal that diverts water just below the confluence of the North and South Platte Rivers about 50 miles below Lake McConaughy
- Canyon lakes, small lakes that are part of the Central Supply canal
- Jeffrey Reservoir, a larger lake near the mid-point of the Central Supply Canal that serves a hydro plant below which water may continue in the Supply Canal or be returned to the Platte River.
- Johnson Lake, the largest lake on the Supply Canal which regulates water for two hydros below which water may be returned to the Platte River.

Non-Project Facilities

- Elwood Reservoir, a holding reservoir that draws water from the Supply Canal above Johnson Lake. It is normally pumped full in Spring and then drawn down during irrigation season.
- Irrigation distribution canals, hundreds of miles of smaller canals and laterals taking water from the eastern end of the Central Supply Canal to the irrigation customers
- Irrigation customers – agricultural users and habitat managers

C. Areas Explored that Became Part of the Flow Attenuation Plan

Johnson Lake will be used to attenuate flows that are determined to threaten the nests of least terns and piping plovers by raising the elevation of Johnson Lake during and after a precipitation event. Central will decrease the outflow or pump water into Elwood Reservoir during and after a

precipitation event to reduce return flows. Operations of Johnson Lake and Elwood Reservoir to attenuate flows are discussed in the Flow Attenuation Plan.

Several years ago, Central began making deliveries of water which might contribute to high summer flows to the U.S. Fish and Wildlife Service's (Service's) Funk Lagoon Waterfowl Production Area (WPA) in the Rainwater Basin. Deliveries to these wetlands will continue under the Plan consistent with water rights and Central's ability to serve those lands. Expanding those deliveries to increase attenuation of high flows does not appear possible at this time. The Service has several WPAs in the Rainwater Basin area in central Nebraska, and Central has had discussions with the Service, both the Grand Island Field Office and the Kearney Rainwater Basin office regarding potential water delivery to these Service WPAs. Discussions regarding deliveries to the Atlanta WPA concluded with the decision that no deliveries would be sought because of the location of the WPA. The Rainwater Basin lies in part outside the Platte River drainage. The Service does not want to deplete Platte River waters by delivering water to WPAs like Atlanta WPA that are outside of the Platte River Basin. Additionally, since 1998 the Service has applied to cancel 467 of its 792 contract acres, eliminating water service to some of its WPAs entirely. Due to the cancellation of the water service agreements and the subsequent lack of diversion at these locations, these lands will lose their water rights. Central cannot deliver water to lands without water rights as a matter of state law. If wetland managers change their current management plans or obtain water rights for new wetland area, Central will work with the managers to serve those lands consistent with the efforts to attenuate flows.

D. Areas Explored that Did Not Become Part of the Flow Attenuation Plan

Lake McConaughy. Rainfall events occurring in the North Platte drainage above Lake McConaughy are stored for later release and thus play no role in the high summer flow. Those occurring on the South Platte sometimes occur far enough upstream that their effect can be partially attenuated by reducing releases from Lake McConaughy for holders of natural flow rights. Summer releases from Lake McConaughy – whether for irrigation or the environment – are always planned taking existing and predicted South Platte flows into account. Summer storms that occur further downstream are difficult to predict and impossible to respond to using Lake McConaughy. Decisions regarding the release of or pass through of water from Lake McConaughy are made some five days before water is returned to the river at Overton, the system's principle return point. Water can also be returned to the river at Jeffrey, approximately three days after release from Lake McConaughy. These flows arise in the habitat area of interest five to seven days after release from Lake McConaughy. Lake McConaughy is simply too far away to be useful in attenuating high summer flows.

The Central Supply Canal. The supply canal system was designed and constructed as a fixed head canal. This means that flows are controlled through a number of check gates and structures so that, within the normal flow range, water levels in the supply canal above each structure are always the same. The ability to fluctuate the level in the canal is very limited, and damage issues preclude pursuing this option. If the system were operated at its normal level and then forced to rise in an effort to hold back flows, siphonic spillways would open. These spillways are intended as a last resort safety measure to preclude overtopping and canal washout, since operation of the siphonic spillway results in flooding and damage to adjacent fields. This

would not be an acceptable scenario several times a summer. Operating with the canal at a lower level to allow space for levels to rise is not practical from a control standpoint. It is very difficult and time consuming to overcome the fixed head design to raise or lower the operating elevation of the supply canal. Below normal water levels would result in decreased or fluctuating flows as water is trapped by control structures and check gates that are partly above the water line. Central's experience with low flows in drought years shows that low levels can lead to bank erosion and sloughing. Fluctuating levels compounds the problem. The engineering and cost issues associated with attempting to use the canal to attenuate flows mean this is not a feasible option.

The canyon lakes. The canyon lakes are a number of small bodies of water located along the supply canal. They are a by-product of the canal design and construction process – if the builders identified a small valley that could be flooded and serve as a stretch of the canal, they did so and saved on digging time and costs. These lakes were not designed to regulate flow, and do not have the necessary structures to allow Central to raise or lower water level independent of the supply canal.

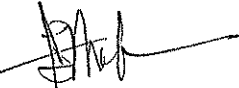
Jeffrey Reservoir. Jeffrey Reservoir operations were examined to see if lake levels could be kept lower to make temporary capacity for the storage of flows during and after rainfall events. Jeffrey Reservoir is small and shallow. Even a one foot change in elevation has serious impacts on the property of cabin owners and on recreational use of the lake -- making docks inaccessible if water level is dropped and causing flooding at higher elevations. A foot change in elevation corresponds to less than 500 AF, or the potential to hold back 125 cfs for two days. Jeffrey Reservoir's limited ability to accommodate level fluctuations is already fully used to provide its design function of reregulating supply canal flows near the mid point. In serving that function, Jeffrey Reservoir already attenuates some increased inflow due to precipitation events along the supply canal between the diversion and Jeffrey Reservoir. Given its location some two to four days upstream of the habitat area, its very limited capacity for holding back flows, and its existing reregulation functions, Central concluded that operational changes at this lake are not warranted.

Irrigation Distribution Canals and Agricultural Irrigation Customers. The irrigation canals themselves are already used to attenuate flows to some extent. When a rainfall event occurs within the irrigation distribution area, water levels begin to rise in Johnson Lake and the canals themselves because of rain and rainfall drainage. With inflows already exceeding outflows for irrigation, Central fully or partially closes the gates at the head end of the distribution system to prevent overtopping of the canal banks, washout of the canal structures and flooding of nearby fields. This is accomplished over a matter of hours under high flow conditions. Under the terms of their delivery contracts with Central, irrigators who have scheduled deliveries are not allowed to discontinue diverting water at the turn-out for several hours until the gates are closed and overtopping has been prevented. By the time the gates at the head end are closed and irrigators are permitted to shut off deliveries, the canal system is normally completely full. By adjusting the headgates, Central maintains full distribution canals throughout rainfall events. Inflow into the canals is typically several hundred cfs because, although total demand is reduced, a number of irrigators may take delivery of all or part of their normal water supply even in the rain. Central is not able to force irrigators to begin to divert

water, however, so further attenuation using the distribution canals and irrigation customers is not possible.

After exploring the options described above, Central concluded that the Flow Attenuation Plan should focus on the remaining, more feasible options, operating Johnson Lake so as to maintain temporary capacity for use in rainfall events, use of Elwood Reservoir, and maintaining the option for additional deliveries to habitat areas in the rainwater basin if they can be arranged in the future. Central urges FERC to conclude that the Plan represents Central's "best efforts" at attenuating summer flows.

Sincerely,



J.L. Maher
Environmental Resources Manager

Attachments

Cc w/attachments:

Margot Zalen, DOI
Ralph Morgenweck, USFWS
Steve Anshutz, USFWS
Kirk Nelson, NGPC
Peggy Harding, FERC
Paul Currier, Platte River Whooping Crane Trust
Mary Jane Graham (w/o attachments)



Nebraska Game and Parks Commission

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Phone: 402-471-0641 / Fax: 402-471-5528 / <http://www.ngpc.state.ne.us/>

July 17, 2000

Jeremie Kerkman
Central Nebraska Public Power & Irrigation
P.O. Box 740
Holdrege, NE 68949-0740

Dear Mr. Kerkman,

We have reviewed the draft "Flow Attenuation Plan" and concur with it with the modifications we agreed on this morning.

Sincerely,

J. Larry Hutchinson, Program Manager
Water Resources Program - Fisheries Division

C: Kirk Nelson (NGPC)

received
7-21-00



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Nebraska Field Office
203 West Second Street
Grand Island, Nebraska 68801

July 17, 2000

Mr. Jeremie Kerkman
Central Nebraska Public Power and Irrigation District
P.O. Box 740
Holdrege, NE 68949-0740


Re: Central Nebraska Public Power and Irrigation District Project 1417, Article 412 - Flow Attenuation

Dear Mr. Kerkman,

This letter is in response to the revised draft Flow Attenuation Plan supplied to the U.S. Fish and Wildlife Service (Service) on July 17, 2000, as required by Article 412 the Federal Energy Regulatory Commission license for Project 1417. Upon reviewing the revised draft Flow Attenuation Plan, the Service concurs with the plan as presented to us.

Questions by members of your staff regarding this matter may be referred to either myself or Mr. Steven Lydick within our office by calling (308)382-6468, extensions 12 and 24, respectively.

Sincerely,


Steven Anschutz
Nebraska Field Supervisor

cc: FERC; Chicago, IL (Attn: Patricia Grant)
USFWS; Denver, CO (Attn: Bob McCue)
DOI; Regional Solicitor's Office (Attn: Margot Zallen)
NGPC; Lincoln, NE (Attn: Kirk Nelson)

received
7-18-00



CENTRAL

*Nebraska Public Power
and Irrigation District*

Flow Attenuation Plan

**The Central Nebraska Public Power and Irrigation District's
Federal Energy Regulatory Commission
Project No. 1417**

July 17, 2000

Prepared Pursuant to Article 412 of the FERC License
Issued July 29, 1998

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Flow Attenuation Plan

1.0 License Requirement

On July 29, 1998, the Federal Energy Regulatory Commission (FERC) issued a 40-year license for The Central Nebraska Public Power and Irrigation District's (Central's) Project 1417. Article 412 of that license requires Central to develop an operational plan to use its best effort to attenuate increased flow in the Platte River which might occur because of rejection of irrigation water due to regional or local weather conditions during the June 1 to August 15 nesting season of least terns and piping plovers (Flow Attenuation Plan).

Article 412 of Central's License requires that:

Within twenty-four months of license issuance, the Licensee, in coordination with the U. S. Fish and Wildlife Service and the Nebraska Game and Parks Commission and with their concurrence, shall file for Commission approval an operational plan for the Licensee to use its best efforts to attenuate increased flows in the Platte River which might occur because of rejection of irrigation water due to regional or local weather conditions during the June 1 to August 15 nesting season of least terns and piping plovers. In developing the plan, the Licensee shall consider, among other things, modifying irrigation season operations to create limited temporary capacity in Johnson Lake, and increasing deliveries to Rainwater Basin wetlands which hold valid state water rights or which acquire them subsequent to the date of the plan, and which can be served by the Licensee. The plan shall include a communication protocol for coordination with the Environmental Account Manager. The plan shall not include any required level or frequency of flow attenuation, and shall not create any operational constraints on Johnson Lake in years when flows are provided pursuant to Article 406.

The Commission reserves the right to make changes in the plan. The Licensee shall begin implementing the plan as approved by the Commission during the first June 1 to August 15 nesting season following Commission approval of the plan.

This Flow Attenuation Plan (Plan) is intended to address the communication and operations activities associated with the implementation of Article 412 of Central's Project 1417 FERC license.

2.0 Description of Issue

During the irrigation season, precipitation events can cause a decrease in demand for water to meet the irrigation needs on Central's system. The rejection of water already in the system but not yet delivered leads to an increase in water returned to the Platte River at the Johnson #2 river return (J-2 return). In combination with higher flows in the Platte River, the unused irrigation water may increase the total flow in the Platte River to a level where it may lead to the inundation of least tern and piping plover nests. Article 412 of Central's Project 1417 FERC license requires Central to use its best efforts to attenuate the increased flows in the Platte River that may result from the rejection of irrigation water during the June 1 to August 15 nesting season.

3.0 System Constraints

The plan below focuses on operational changes at Johnson Lake and adjacent facilities. Johnson Lake is the reservoir closest to the J-2 return and provides the best opportunity to attenuate flows.

3.1 Operations of Johnson Lake

Johnson Lake is located on Central's main Supply Canal approximately 65 miles downstream of the canal diversion at North Platte, NE. Inflows into Johnson Lake fluctuate as a result of many conditions including changes in the diversion rate at North Platte, the discharge rate through the hydropower plant located near Jeffrey Reservoir, flow through the Jeffrey river return, precipitation, and irrigation from the Supply Canal

and the E-65 irrigation canal. Johnson Lake is operated within a narrow elevation range to provide hydropower head on the Johnson #1 Hydropower plant (J-1 plant), head for the E-67 irrigation canal, recreational opportunities and to provide a limited amount of water during peak irrigation demand. Normally, outflows from Johnson Lake fluctuate as inflows fluctuate to avoid increasing the elevation of the reservoir, which may cause bank erosion, or decreasing the elevation, which would result in less efficient hydropower and irrigation operations. The normal operating range for Johnson Lake during the summer months is approximately 2618.0 to 2618.5 feet MSL and approximately 2617.5 to 2618.0 feet MSL during the winter months.

3.2 Irrigation Constraints

The diversion into Central's system at North Platte has a capacity of approximately 2,250 cfs. As the water travels from the diversion structure to Johnson Lake, it suffers evaporation and seepage losses, some is returned to the Platte River at the Jeffrey river return, and some water is used for irrigation along the Supply Canal as well as diverted into the E-65 irrigation canal located just upstream of Johnson Lake. Water is also needed for the E-67 irrigation canal, which diverts water near the outlet from Johnson Lake, and Phelps County canal, which diverts water below the Johnson #2 Hydropower plant (J-2 plant) before the water is returned to the Platte River. In recent history, the three irrigation canals, E-65, E-67 and Phelps County, combined have diverted as much as 1900 cfs during peak irrigation use which is about 300 to 500 cfs more than is typically available in the Supply Canal near Johnson Lake because of losses, irrigation from the Supply Canal, and returns to the Platte River at the Jeffrey river return. If the sum of these irrigation diversions, returns, and losses is greater than the

diversion rate at North Platte, water is drawn from the contents of Central's distribution system, principally from Johnson Lake, until the demand decreases to the point where additional water is no longer needed. This often results in one to two week periods of declining lake levels in Central's system including Johnson Lake until the demand decreases and the water can be replaced.

The diversion structure for the E-67 irrigation canal uses the elevation of Johnson Lake to divert water into the canal. The tail water elevation of the E-67 turnout is near 2612 feet MSL. Operation of this system requires a minimum of four feet of head to ensure the canal is able to divert the water necessary to serve the irrigators on this system.

To ensure adequate irrigation service to the customers diverting from the E-67 irrigation canal, the Johnson Lake elevation must be higher than 2616.0 feet MSL even after a period of peak irrigation use which results in a lower elevation of Johnson Lake. Because the peak irrigation demand and losses in the system may exceed the diversion capability of Central's system by as much as 1,500 acre-feet per day when the Jeffrey return is being used, Johnson Lake elevation must be kept higher than 2616.0 feet MSL to meet the irrigation demand and provide the necessary head for the E-67 irrigation canal. For these reasons, the minimum planned operating elevation for Johnson Lake should be 2617.5 feet MSL. This elevation provides approximately 3,500 acre-feet of water for use by the irrigation canals during peak irrigation demand.

3.3 Recreational and Shoreline Maintenance Concerns

Another factor in managing water is the recreational development that surrounds Johnson Lake. While there are deviations from the normal operating range, many boat docks, shore stations, and boat ramps are positioned to be functional within the normal

operating range of 2618.0 to 2618.5. If the lake were operated at a much higher or lower level, bank protection, cabin lots, and functional use of boating facilities are affected. In recent history, Johnson Lake elevation has peaked as high as 2619.5 feet MSL but has rarely exceeded this elevation. To limit inundating property and damage due to wave action, the maximum operating elevation should be no greater than 2619.0 feet MSL. This level allows minimal space in Johnson Lake to capture runoff from a precipitation event while keeping the elevation from exceeding 2619.5 feet MSL on most occasions.

Operating the reservoir below the normal operating range has caused negative effects on recreational use. Boating facilities and shoreline protection around Johnson Lake are positioned to be functional if the lake is operated in the normal operating range. Many facilities become unserviceable or unusable at lower elevations. Fish spawning and rearing and habitat for young fish may also be negatively affected by changes in shoreline exposure, and result in impacts to sport fishery resources.

3.4 Hydropower Constraints

The J-1 plant consists of two 9 MW capacity units. The peak efficiency point for each unit occurs at a flow of approximately 1,000 cfs. Combined, the peak efficiency point is near a flow of 2,000 cfs. Because of the capacity limitations at the Supply Canal diversion and losses described earlier, inflows into Johnson Lake are normally between 1,000 and 2,000 cfs. Rather than operate both units at the J-1 plant below their peak efficiency point, the units are loaded at their peak efficiency point and operated for shorter periods of time. Normal operations of the J-1 plant are to operate both units at their combined peak efficiency point which results in an increase in the elevation of the Johnson #2 forebay (J-2 forebay). When the J-2 forebay reaches a desired elevation, one

unit at the J-1 plant is taken offline until the J-2 forebay drops below a desired level. This operation uses the J-2 plant to keep the combined contents in Johnson Lake and the J-2 forebay approximately constant. The effect on Johnson Lake of maximizing the efficiency at the J-1 plant is a cyclical fluctuation in the lake elevation in response to the fluctuation of the loading of the hydropower plants. During this cycle, the contents in the J-2 forebay will change by about 1,000 acre-feet. The contents in Johnson Lake fluctuates approximately the same amount, which results in an elevation fluctuation of about 0.5 feet.

Planned rehabilitation of the J-1 and J-2 plants may cause changes in the peak efficiency points for each plant. The efficiency points are not expected to change such that the changed efficiency loadings cause a major change in operations or the elevation fluctuation of Johnson Lake.

3.5 Recommended Operational Range

Because of the constraints described above, the recommended operational range for Johnson Lake is 2617.5 to 2619.0 feet MSL.

4.0 Operations of Johnson Lake for Flow Attenuation

Central's flow attenuation efforts are intended to manage lake levels within the range of 2617.5 to 2619.0 feet MSL to provide space in Johnson Lake to capture runoff from a precipitation event while keeping the elevation from exceeding 2619.5 feet MSL on most occasions. When Johnson Lake operations are considered along with the space available in the J-2 forebay there are approximately 2,500 acre-feet of space available to attenuate flows that result from the rejection of irrigation water. For example, the space could be used to attenuate 250 cfs of rejected irrigation water for about 5 days.

4.1 Determination of Flows to Attenuate under the Plan

Central operates three irrigation canals, E-65, E-67, and Phelps County canal with approximate capacities of 350 cfs, 100 cfs, and 1500 cfs respectively. The E-65 and E-67 irrigation canals have an irrigation demand that is near the capacity of the canal. The irrigators on these canals must adhere to a strict schedule to facilitate delivery of water to as many acres as the canal capacity will allow. As a result of this high demand, there is less variability in the diversion rate since many irrigators will elect to take delivery of their water even after a precipitation event because their next opportunity to take delivery of water is two to three weeks later. The demand for irrigation water from the Phelps County canal is generally lower than the canal capacity allowing irrigators more flexibility to match deliveries to crop needs. The result of this flexibility is more variability in the diversion into Phelps County canal as a result of precipitation events than in the E-65 and E-67 irrigation canals.

If the E-65 and E-67 irrigation canals reject irrigation water at the same time as the Phelps County canal however, these flows will also be attenuated since this Plan is based upon the J-2 return rate prior to the rejection of irrigation water by Phelps County canal.

To determine the magnitude of the attenuation of flows returned to the Platte River due to the rejection of irrigation water, each year, a "benchmark flow" at the Platte River gage near Overton for the June 1 to August 15 time period will be developed by Central with the concurrence of the Environmental Account Manager (EA Manager). The benchmark flow will be based on any data collected by the U. S. Fish and Wildlife Service regarding nest locations and flows that are believed to not inundate known nests,

flows at the Platte River gage near Overton during the preceding month, as well as the known limitations on flow attenuation given the limited space available in Johnson Lake.

This Plan will be implemented from June 1 to August 15 of each year except for any year in which Article 406 (Attachment A) of Central's FERC license requires flows at Overton. The Plan may also be suspended by mutual agreement between Central and the EA Manager. If events occur that require flows to be provided at Overton, NE pursuant to Article 406 of the license the conditions and operations of this Plan shall be suspended for the three year period covered under Article 406.

4.2 Operations before Attenuation Efforts are Made

Beginning June 1 of each year, Johnson Lake will be operated near the low end of the recommended operational range, which is 2617.5 to 2619.0 feet MSL. Therefore when attenuation is required, space will be available.

4.3 Attenuation Operations

The objective of the Plan is, where feasible, to avoid exceeding the benchmark flow at the Platte River gage near Overton. If rejected irrigation water available to be returned to the Platte River will not cause the flow at the Platte River gage near Overton to exceed the benchmark flow, no attenuation need occur and the space in Johnson Lake will remain available for future attenuation.

To determine the rate at which flows should be attenuated, Central will monitor the Platte River gage near Overton and compare the flow to the benchmark flow. If the flow at the Platte River gage near Overton is near the benchmark or exceeds the benchmark, the flow rate at the J-2 return will not be increased until the flow at the Platte

River gage near Overton declines or until the Johnson Lake elevation reaches 2618.5 to 2619.0 feet MSL.

While attenuation efforts are in effect, Central will monitor the Platte River gage near Overton throughout the day and determine if rejected irrigation water should be held back or if additional water may be released. Central will adjust the J-2 return flow based on the current flow and trend at the Platte River gage near Overton and the current flow at the J-2 return. The gage will be checked at least twice per day and adjustments will be made to the J-2 return flow such that when the change in flow arrives at the Platte River gage near Overton, the flow will be near the benchmark level. The travel time for water between the J-2 plant and the Platte River gage near Overton is several hours and adjusting the flow more often than every eight to twelve hours would require that estimates be made on the effects of previous adjustments that may or may not have arrived at the river gage. The long travel time and changing conditions mean it will be difficult to impossible to keep flows at or just below the benchmark. It is counterproductive to attempt to keep flows well below the benchmark since attenuating more flow than necessary will result in filling the available space in Johnson Lake faster than necessary and losing the capability of attenuating flows for a longer period of time. Thus, the "best effort" standards of the license article will be met if Central adjusts flows under the procedure described above using flow estimates that were reasonable at the time.

4.4 Operations after Making Attenuation Efforts

Rejected irrigation water will be attenuated until the flow at the Platte River gage near Overton decreases to a level where it is no longer necessary to attenuate flows or

Johnson Lake reaches an elevation of 2618.5 to 2619.0 feet MSL. Attenuation of flows will cease before Johnson Lake reaches an elevation of 2619.0 feet MSL if the efficient operation of the J-1 plant as described in Section 3.4 will cause the Johnson Lake elevation to continue to increase. After this time, the discharge from the J-2 plant will be adjusted to prevent the combined Johnson Lake and J-2 forebay contents from increasing.

The lake will be operated such that inflows to Johnson Lake and discharge through the J-2 plant are approximately matched and the lake elevation remains at 2618.5 to 2619.0 feet MSL until flows at the Platte River gage near Overton begin to decline. As flows in the Platte River near Overton decline, the J-2 return flows may be increased to begin evacuating water from Johnson Lake while keeping the flow at the Platte River gage near Overton below the benchmark flow, or in relatively dry years releases from McConaughy will be reduced decreasing inflows into Johnson Lake and conserving storage. The lake elevation will be returned to the lower end of the recommended operational range (2617.5 to 2619.0 feet MSL) in preparation for future attenuation. The rate at which the Johnson Lake contents can be lowered will be limited by the capacity and efficient operation of the J-2 plant, the proximity of the flow at the Platte River gage near Overton to the benchmark flow, and in dryer years, irrigation demand and travel time from Lake McConaughy. Johnson Lake elevation will be maintained near the low end of the operational range until the next weather event that causes the rejection of irrigation water and requires efforts to be made to attenuate flows under this Plan.

4.5 Adjustments to the Benchmark Flow

If the flow at the Platte River gage near Overton exceeds the benchmark flow for any reason including high flows in the Platte River or the inability to attenuate flows in

Johnson Lake because of the limited space available, the benchmark will be increased to the highest daily average flow at the Platte River gage near Overton that has previously occurred during the June 1 to August 15 time period. Once flows exceeding the original benchmark occur at the Platte River gage near Overton, it is assumed that flows of that same magnitude that occur later would cause no additional nest inundation. Central or the U. S. Fish and Wildlife Service may also identify a need to alter the benchmark during a nesting season due to late nest initiation or re-initiation following a high water event. If such a need is identified, Central will, with the concurrence of the EA Manager, establish a new benchmark based on the same criteria used to establish the current benchmark. Barring such a late nest initiation or re-initiation, the maximum flow experienced will be used as the new benchmark for the remainder of the June 1 to August 15 time period.

In addition, Central and the EA Manager may agree that space available in Johnson Lake to attenuate flows will be insufficient because of flow conditions or a forecast that predicts precipitation or high flows upstream of Overton that would arrive at the gage at approximately the same time as the flow attenuation would end due to the limited space available in Johnson Lake. To avoid filling the space available in Johnson Lake before the Platte River near Overton begins to decline or Phelps County canal irrigation demand increases, Central, with written concurrence from the EA Manager, will increase the benchmark flow. Allowing more water to be returned increases the length of time that flows may be attenuated and reduces the likelihood that a higher flow will be experienced after the attenuation space is full.

5.0 Attenuation using Elwood Reservoir

5.1 Elwood Reservoir and E-65 Operations

The E-65 canal diverts water from the Supply Canal just upstream of Johnson Lake. Siphons located in the first five miles of the E-65 canal limit the diversion at the headgate to about 350 cfs. Irrigation demand along the E-65 system typically requires 400 to 500 cfs during the irrigation season. Elwood Reservoir was constructed about five miles downstream of the E-65 canal headgate to supplement the diversion at the headgate and meet the irrigation demand on the system. Prior to the irrigation season, water is diverted into the E-65 canal and pumped into Elwood Reservoir for use later in the irrigation season. Depending upon the elevation of Elwood Reservoir, each pump at the station can pump 50 cfs to 75 cfs into Elwood Reservoir. The three pumps combined can pump 150 cfs to 225 cfs. During the irrigation season, when irrigation demand on the E-65 system exceeds the amount able to be diverted, water is released from Elwood Reservoir. Fluctuations in irrigation demand are usually covered by fluctuating the rate of outflow from Elwood reservoir with a relatively steady diversion at the headgate of the E-65 canal.

5.2 Attenuation Operations of Elwood Reservoir

After a precipitation event, if the continuing irrigation demand on the E-65 system is between 350 cfs and 500 cfs, the diversion into E-65 will not normally be reduced but the outflow from Elwood would be reduced to avoid over topping the canal system. If the continuing irrigation demand decreases below 350 cfs, in addition to stopping the outflow from Elwood and meeting the irrigation demand for E-65, as soon as operationally feasible, Central will pump water into Elwood Reservoir if the following conditions are met:

1. Irrigation demand is sufficiently low that the diversion capacity into E-65 exceeds the current irrigation demand on E-65 by enough to operate at least one pump at its designed capacity.
2. Power to operate the Elwood pump station is available. Electricity to operate the pump station at Elwood Reservoir is currently obtained from Dawson County Public Power. The service agreement between Dawson County Public Power and Central is for interruptible service which means power may not be available to run the pumps.
3. The structural and mechanical systems at the Elwood pump station must be in working order. It will not be considered non-compliance with this Plan if a pump fails to start or shuts down, or if one or all pumps or the inlet structure is otherwise out of service for repair or maintenance. Where feasible, Central will schedule any planned maintenance activities to occur prior to June 1 or after August 15 of each year.
4. Water rights must allow the available water to be pumped into Elwood Reservoir. Central's storage permit for Elwood Reservoir is a transfer of the storage right for Lake McConaughy. Central is only allowed to pump North Platte River flows into Elwood Reservoir or transfer storage from Lake McConaughy to Elwood Reservoir.
5. Consistent with conservation commitments, Central will only pump water into Elwood Reservoir that it anticipates will be used for irrigation during that irrigation season and avoid high Reservoir elevations during the non-irrigation season that would increase total losses and out of basin losses. Based on

seepage studies and operating experience, Central maintains a Target Operating Curve (TOC) and a Maximum Target Operating Curve (MTOC) for Elwood Reservoir to minimize seepage and protect soil cement lining. Central will manage pumping and releases from Elwood during and after a precipitation event to attenuate flows in accordance with this Plan while remaining within this range.

There may be extenuating circumstances such as abnormally wet or dry conditions that affect the irrigation demand, the expected end date of irrigation, spring maintenance along the E-65 system or a change in service acres that will cause Central to deviate from or replace the then current TOC or MTOC.

6.0 Other Methods to Attenuate Increased Flows

6.1 Rainwater Basin Wetlands

Central will continue to deliver surface water to Rainwater Basin wetlands which hold valid state water rights and will serve additional wetlands that obtain valid state water rights. Currently, Central delivers less than 25 cfs to Rainwater Basin wetlands and maintaining and operating these wetlands to benefit migratory birds is generally not compatible with substantial summer water deliveries. As the entity delivering water to these and any additional Rainwater Basin wetlands that may be managed for wildlife in the future, Central will know as a matter of course when water deliveries are desired. If current management plans are changed by wetland managers, or if new wetlands obtain water rights, Central will evaluate their plans. If it is determined by Central that summer delivery of water during spike flow events to wetlands managed for wildlife is feasible,

steps will be taken to work with the owners to serve those lands in a manner that is consistent with this Plan and aid in the control of rejected irrigation water. Because of the relatively small flow rates, impact on spike flow events will be similarly small.

6.2 Additional Storage Facilities

Central has in the past, is currently, and is likely in the future, to investigate additional storage options along the Supply Canal upstream and downstream of Johnson Lake. If additional storage space is constructed, Central will evaluate the reservoirs during the design phase to determine if they could be efficiently operated to aid in attenuating increased flows in the Platte River as a result of the rejection of irrigation water while fulfilling their intended functions. If so, a plan for those reservoirs to attenuate increased flows will be developed to supplement or replace this Plan. Any future plans would be developed in coordination with the U. S. Fish and Wildlife Service and the Nebraska Game and Parks Commission and with their concurrence.

7.0 Communication Protocol

Central will designate an individual responsible for coordinating this Plan with the EA Manager, who is appointed by the U. S. Fish and Wildlife Service.

Prior to June 1 of each year, The EA Manager in coordination with Central shall develop a benchmark flow at the Platte River gage near Overton. This flow value will be used to determine the magnitude and timing of the attenuation of rejected irrigation water. The benchmark flow will be stated in cubic feet per second at the Platte River gage near Overton.

During the course of the nesting season, it may be beneficial to adjust the benchmark flow. Central will make adjustments to the benchmark flow if it is within the guidelines of this Plan or with written concurrence from the EA Manager.

In certain years, because of high Platte River flows during the nesting season, it may become apparent that no flow attenuation is necessary. With concurrence from the EA Manager, this Plan may be suspended for part or all of the remaining nesting season. To reinstate this Plan, the EA Manager will notify Central in writing and Central will adjust their operations as necessary to resume implementing this Plan.

Informal communication between Central and the EA Manager will likely occur to discuss the current benchmark and the operation of Elwood Reservoir and Johnson Lake before, during, and after an attenuation period. Central will advise the EA Manager regarding anticipated operations of the Phelps County canal and any anticipated changes in canal flow.

8.0 Reporting and Record Keeping

Central will maintain copies of all hourly flow values at the Platte River gage near Overton as recorded by Central and will keep the EA Manager apprised of conditions in Central's system and in the River during any flow event that may require attenuation.

Central will keep a file of all written communication between the EA Manager and Central including benchmark flows and changes in the benchmark flow and reports.

At the end of each June 1 to August 15 time period, Central will report to the EA Manager any occurrences of the flow at the Platte River gage near Overton which exceeded the benchmark and rejected irrigation water was being returned to the River. An explanation of Central's operations during these times will be included. Central will

also report any instances when Elwood Reservoir was operated substantially lower (more than 2 feet) than the TOC or substantially higher (more than 2 feet) than the MTOC. The reason for operating outside the operating range will also be given. Central will maintain a copy of the reports provided to the EA Manager.

9.0 Revisions to this Plan

Over time, it may be appropriate to revise the communication protocols and operations defined in this plan. Revisions may be made by consensus of representatives of Central, the U. S. Fish and Wildlife Service, and the Nebraska Game and Parks Commission. Such revisions will be implemented 30 days after submitting the revisions to FERC (or on whatever later schedule is agreed to among the parties), unless FERC orders otherwise within 30 days of receiving the revisions.

If a consensus cannot be reach, Central and/or the other parties may petition FERC to revise the Plan, with changes to be implemented upon FERC approval.

10.0 Summary

During June 1 to August 15 Central will operated Johnson Lake in accordance with this Plan. This plan calls for normal operating levels at Johnson Lake of 2617.5 to 2619.0 feet MSL. During periods of rejection of irrigation water, Central will use best efforts to attenuate those flows that would exceed a benchmark flow at the Platte River gage near Overton. Johnson Lake elevation will be increased to attenuate the return of rejected irrigation water to the Platte River up to an elevation of 2618.5 to 2619.0 feet MSL depending on the contents of the J-2 forebay. After a period of attenuation, Johnson Lake will be returned to the lower end of the recommended operational range (2617.5 to

2619.0 feet MSL) to facilitate attenuation of future flows that would exceed the benchmark flow.

Central will manage inflows and releases from Elwood reservoir to aid in attenuating high flows. Central will manage the storage contents of Elwood Reservoir by reducing the outflow or pumping water into Elwood Reservoir within the constraints discussed in this Plan. Central will pump water into Elwood Reservoir if there is sufficient capacity into the E-65 system, power is available and the pumps are in working order to operate the pump station, Central has a legal right to store the water, and Central believes the water can be used later in the irrigation season to meet irrigation demand.

Central will continue to deliver surface water to Rainwater Basin wetlands which hold valid state water rights and will serve additional wetlands that obtain valid state water rights, but consideration must be given to the adverse impacts to lands surrounding the wetland.

If additional storage space is constructed and could be efficiently operated to aid in attenuating increased flows in the Platte River as a result of the rejection of irrigation water, a flow attenuation plan for those reservoirs would be developed to supplement or replace this Plan.

Attachment A

License Article 406 of Central Nebraska Public Power and Irrigation District
Project No. 1417 Federal Energy Regulator Commission License issued July 29,1998.

Article 406 In the event that the Cooperative Agreement fails (a signatory withdraws from the Cooperative Agreement, the Cooperative Agreement terminates and a Program is not adopted, or activities under the Cooperative Agreement are not adequately completed and the situation cannot be remedied through the Cooperative Agreement's Governance Committee or by the Governors and Secretary of the Interior), for the first three full October 1 to September 30 water years thereafter, the Licensee shall provide flows at Overton, Nebraska, during the months of June, July, August and September of 600 cubic- feet -per- second (cfs) if the previous end-of-month storage in Lake McConaughy is greater than or equal to 1.4 maf, and of 400 cfs if the previous end-of-month storage in Lake McConaughy is greater than or equal to 1.2 maf and less than 1.4 maf; provided, however, that Environmental Account water shall not be used to provide such base flows. The Licensee shall, to the extent feasible, transport water intended for such base flows through the project works of Project No. 1417 to the J-2 Return.

The Licensee will plan for relatively steady day-to-day flows throughout each month, but as variability is expected, these base flow requirements are on a monthly average basis based on measurements at Overton, Nebraska, using current gauge readings with no retroactive application for recalibrated measurements, and subject to section III.A.7. of Exhibit X permitting temporary suspension of operational rules if events occur which prevent operations in the manner prescribed.