NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: E65 Canal Lining Project

PRIMARY CONTACT INFORMATION

Entity Name: The Central Nebraska Public Power & Irrigation District (Central or District)

Contact Name: Marcia L. Trompke, Conservation Director

Address: P.O. Box 740, 415 Lincoln St., Holdrege, NE 68949

Phone: (308) 995-3550

Email: mtrompke@cnppid.com

Partners / Co-sponsors, if any: N/A

1. Dollar amounts requested: Grant

   Grant amount requested. $ 1,643,280

   Loan amount requested. $ N/A

   If Loan, how many years repayment period? N/A

   If Loan, supply a complete year-by-year repayment schedule.
   N/A

2. Permits Needed - Attach copy for each obtained (N/A = not applicable)

Nebraska Game & Parks Commission (G&P) consultation on Threatened and Endangered Species and their Habitat	N/A☒	Obtained: YES☐	NO☐
Surface Water Right	N/A☒	Obtained: YES☐	NO☐

USACE (e.g., 404 Permit)	N/A☒	Obtained: YES☐	NO☐
Cultural Resources Evaluation	N/A☒	Obtained: YES☐	NO☐
Other (provide explanation below)	N/A☒	Obtained: YES☐	NO☐

3. Are you applying for funding for a combined sewer over-flow project?

   YES☐ NO☒

   If yes, do you have a Long Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality?

   YES☐ NO☒

   If yes attach a copy to your application. N/A

   If yes what is the population served by your project? N/A

   If yes provide a demonstration of need. N/A

   If yes and you were approved for funding in the most recent funding cycle, then resubmit the above information updated annually but you need not complete the remainder of the application. N/A

4. If you are or are representing an NRD, do you have an Integrated Management Plan in place, or have you initiated one?

   N/A☒ YES☐ NO☐

5. Has this application previously been submitted for funding assistance from the Water Sustainability Fund and not been funded?

   YES☐ NO☒

   If yes, have any changes been made to the application in comparison to the previously submitted application? N/A

   If yes, describe the changes that have been made since the last application. N/A

   No, I certify the application is a true and exact copy of the previously submitted and scored application. (Signature required) N/A

6. Complete the following if your project has or will commence prior to next July 1st.

As of the date of submittal of this application, what is the Total Net Local Share of Expenses incurred for which you are asking cost share assistance from this fund? $ None

Attach all substantiating documentation such as invoices, cancelled checks etc. along with an itemized statement for these expenses. N/A

Estimate the Total Net Local Share of Expenses and a description of each you will incur between the date of submittal of this application and next July 1st for which you are asking cost share assistance from this fund.
$ None

Section B.

DNR DIRECTOR'S FINDINGS

Project Summary

The Central Nebraska Public Power and Irrigation District's (Central) project fits the 2016 Water Sustainability Fund (WSF) purpose of protecting the ability of future generations to meet their water needs and more specifically, it is designed as a step toward bringing the over-appropriated area of the Platte Basin back to a fully appropriated status.

The objective is to increase the efficiency of the Central irrigation delivery system with the associated water savings benefitting: 1) storage in Lake McConaughy 2) water supplies for irrigation; 3) non-consumptive hydropower releases and Platte River flows, and 4) recreation and the fishery.

The plan to accomplish the objective is to eliminate seepage losses through a 5-mile section of earthen E65 main canal in western Phelps County by installing an 80-mil High Density Polyethylene (HDPE) lining. Central's main irrigation canals follow the high elevation contour lines to maximize the use of hydraulic head; this particular five-mile canal section is large but condensed into three land miles from start to end points, so that disproportionately large recharge occurs under fewer acres. The best estimate, based on flow measurement history and canal management, is that lining this canal section can reduce seepage losses by 4,000 acre-feet (AF) annually.

Decades of conservation efforts by Central and its producers have significantly increased the efficiency of our original infrastructure and the on-farm delivery systems. Inflows to Lake McConaughy, the primary source of water for irrigation of over 109,000 acres, have declined significantly because of upstream groundwater pumping and conservation measures. Central has allocated irrigation deliveries in eight of the last eleven years because of drought and the above mentioned impacts to inflows. The Platte River above the Kearney Canal was declared over appropriated in 2004. Continuing efforts to meet the current and future needs of the Platte Basin water users is critical to Nebraska.

Central has concluded this project is feasible and cost effective when compared to alternate water projects that add sustainability to the Platte Basin. Central believes the project to be a proper use of both District and State funds. The District is ready to move this project into the final design and construction phase next summer with an expected completion date of January 1, 2018; or prior to our 2018 irrigation season.

Our electronic application is organized in two files to provide the specific information that has been requested. Answers to this Section B: Questions 1-3 and 10 are provided in the Feasibility Study that can be printed and studied separately. Those answers are repeated in this file along with information to answer all remaining questions. Submission file names are as follows;

- WSF Application2015-CNPPID Lining Project.pdf (this file)
- WSF Application2015-CNPPID Lining Project Feasibility.pdf

Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?

YES☒ NO☐

1(a). If yes (structural), submit a feasibility report (to comply with Title 261, CH 2) including engineering and technical data and the following information:

Feasibility Report - Introduction

The Central Nebraska Public Power and Irrigation District

The Central Nebraska Public Power and Irrigation District (Central) was organized in 1933 and its regional hydro-irrigation project was constructed between 1935 and 1942. The keystone of the project is Lake McConaughy on the North Platte River near Ogallala, Neb.

Central's project provides surface water irrigation service to more than 109,000 acres in Phelps, Gosper, Kearney, Lincoln and Dawson counties, making it the largest irrigation project in Nebraska. Another 110,000 acres served by other irrigation projects receive supplemental water from Lake McConaughy. In addition, Central's system of canals and laterals provides documented groundwater recharge to more than 310,000 acres in and adjacent to Central's service area.

The production of hydroelectric power is another major benefit of Central's project. Three hydroplants on the Supply Canal and another hydroplant below Kingsley Dam can generate a total of 113 megawatts of electricity, enough power to serve the needs of approximately 37,000 homes. All power generated at the plants is sold at wholesale to other utilities for distribution.

Central's project also provides the public with opportunities to enjoy a wide range of recreational activities. In addition to Lake McConaughy -- one of the most popular recreational sites in the state -- recreational opportunities abound along a chain of Supply Canal lakes, including Jeffrey Lake, Midway Lake and Johnson Lake, as well as Elwood Reservoir, which is located along the E65 Canal.

Another benefit of the project is the abundance of habitat for numerous species of fish and wildlife in and adjacent to Central's lakes and canals. Central has worked with a number of state and federal agencies and private organizations to enhance wildlife habitat in the Platte River Valley.

Central is a political sub-division of the State of Nebraska. It is governed by a 12-member board of directors elected by the citizens of Phelps, Kearney, Gosper, Dawson, Lincoln and Keith counties. Central's hydroelectric facilities are licensed by the Federal Energy Regulatory Commission. Revenues come primarily from providing irrigation delivery service and the sale of hydropower.

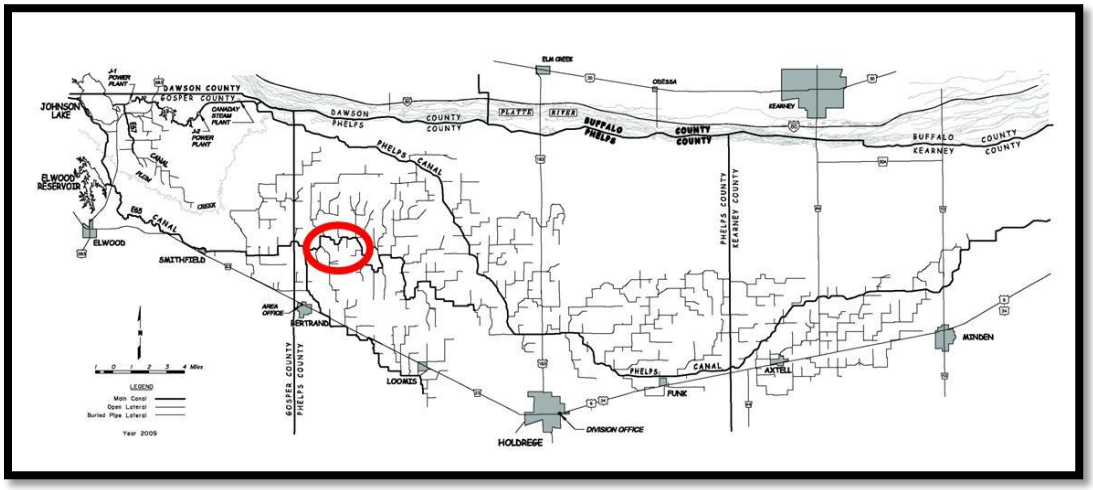
Central maintains offices at Kingsley Dam, Gothenburg and Bertrand. The administrative headquarters are located in Holdrege.

A discussion of the plan of development (004.01 A);

Plan of Development

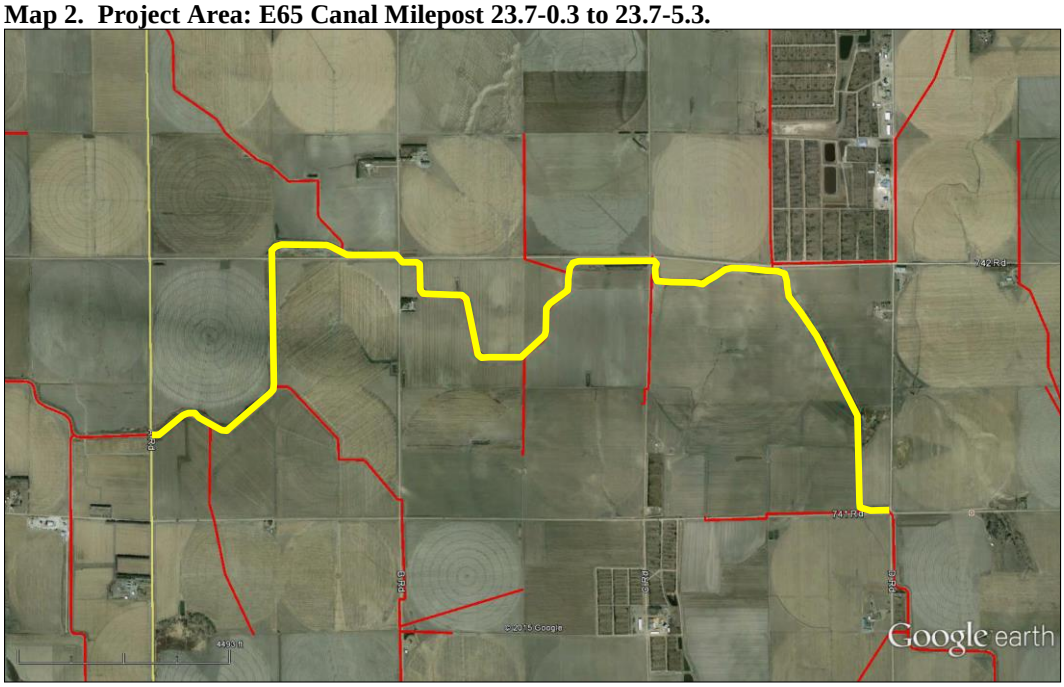
This feasibility study evaluates a project that Central is submitting for consideration in the 2015 Water Sustainability Fund (WSF) request for project proposals. The project is the installation of approximately five miles of membrane lining in the E65 irrigated area (hereinafter referred to as the Project). By saving water from canal seepage losses, the Project will help reduce shortages in the overappropriated Platte River system, assisting in efforts to move toward a fully appropriated status. The legislature of the State of Nebraska passed LB 962 in 2004 establishing criteria for the designation of basins, sub-basins or reaches as overappropriated and on September 15, 2004, the Nebraska Department of Natural Resources designated a portion of the Platte River Basin upstream of the Kearney Canal as overappropriated. Almost all Central facilities, from Lake McConaughy through the irrigated area, lie within the overappropriated designation. This Project will increase the efficiency of the Central's E65 irrigation system by eliminating seepage losses through a 5-mile section of a large, main canal. The Project location is in Phelps County as shown on Map 1 and Map 2. The lined section will produce a water savings in each irrigation season over the next 50 years[1] which is expected to be 4,000 acre-feet (AF).

Map 1. Project area and the Central irrigation canals.



[1] GRI Report # 42: Lifetime Prediction of Laboratory UV Exposed Geomembranes: Part I – Using a correlation Factor, Geosynthetic Institute, January 3, 2012, p. ii.

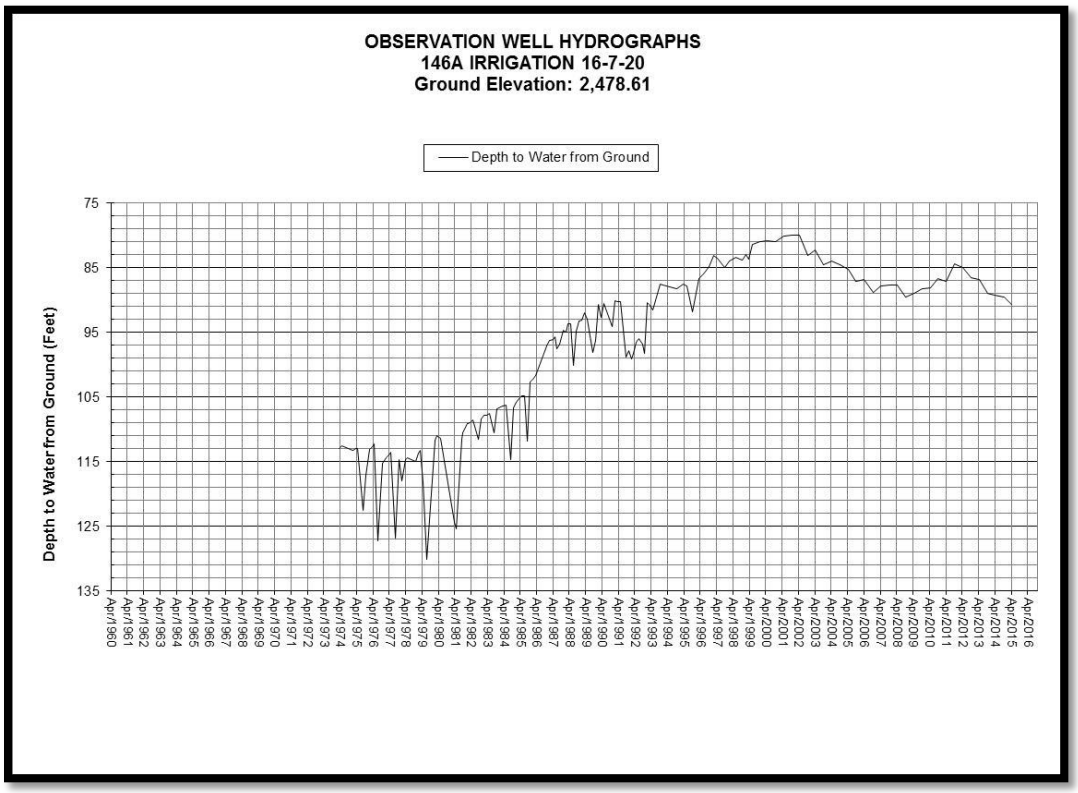
Map 2. Project Area: E65 Canal Milepost 23.7-0.3 to 23.7-5.3.



The most important benefit of the Project is lower diversion requirements at the E65 headgate. During a typical irrigation season, most of the water saved will remain in Lake McConaughy (as a junior natural flow user on the Platte River, Central relies on Lake McConaughy storage water for most of the irrigation deliveries and very little natural flow) providing increased drought protection for irrigators and benefits to recreation and the fishery. Extra water saved in Lake McConaughy will also result in additional water available for hydropower generation and increased releases for mandatory non-irrigation season minimum flow requirements that are based on reservoir content (during the non-irrigation season Central must meet minimum diversion requirements at Central's diversion dam near North Platte, Nebraska which are a requirement of Central's license from the Federal Energy Regulatory Commission). The minimum diversion requirements in the non-irrigation season and conservation savings would likely result in some additional water released back to the Platte River at Central's J-2 return and through the Big Bend reach of the Platte – a net gain to Platte River flows below Overton, Nebraska.

The savings from seepage losses through Central's canal will result in a corresponding reduction in incidental recharge from the canals. Figure 1 shows annual changes in the groundwater level resulting from recharge at an observation well, 1/2 mile southwest of the midpoint of the Project. The elevation of the water table has increased over time as a result of canal seepage with some fluctuation during the recent drought years. During this drought period, reduced water supply forced the first allocations in more than 60 years of operation in Central's irrigated area. Central's irrigators increased the use of groundwater and Central shortened the irrigation season resulting in less recharge.

Figure 1. April depth to water; 1974-2015 at Observation Well 146A.



Most WSF goals are met by this Project. The project increases streamflow (Goal 1), promotes the goals and objectives for approved integrated management plans or groundwater management plans (Goal 3), contributes to the goals of agricultural uses, improves recreational benefits, wildlife habitat, conservation and preservation of water resources (Goal 4), provides increased water productivity (Goal 6), and uses the most cost-effective solution available (Goal 7). Project activities also fall into two of the four WSF preferred program categories; 2) rehabilitation of water supply infrastructure, new water supply infrastructure or water supply infrastructure maintenance; and 3) conjunctive management, storage and integrated management of groundwater and surface water.[2]

Background Information

Operation

The E65 Canal is one of three irrigation canals operated by Central in Gosper, Phelps and Kearney counties in south-central Nebraska; the remaining two are the smaller E67 Canal and the larger Phelps Canal. Irrigation deliveries are also made along the 75-mile supply canal beginning at North Platte and running south of the Platte River

[2] Adapted from: Nebraska Natural Resources Commission, Title 261-Rules Governing the Administration of the Water Sustainability Fund, Adopted September 16, 2015, pp.1-2.

through Lincoln, Dawson and Gosper counties. In 2015, Central provided irrigation service to 109,152 acres.

Central's last irrigation survey, completed in 2014, shows the E65 Canal has 187.5 total canal miles; 74.3 miles in pipeline, 2.9 miles of membrane or concrete lined canal, 1.7 miles of poly-coated steel siphons, 1.3 miles of bottom only membrane-lined canal and 107.3 miles of open earthen canal. In 2015, Central delivered irrigation water to 42,141 acres through the E65 Canal. Flow into the E65 Canal is constrained by three inverted siphons with a maximum flow of 365 cubic-feet per second (cfs) which is not enough to service all irrigation contracts without the use of Elwood Reservoir. The flow through the E65 siphons is supplemented by releases from Elwood Reservoir to meet irrigation flows of 675 cfs. Flow through the Project is typically 250 cfs in the irrigation season with water in the Project 135 days of the year — 2 days in April, 123 days in May-August and 10 days in September. Losses are estimated at approximately 3 cfs/mile or 4,050 AF for the season.

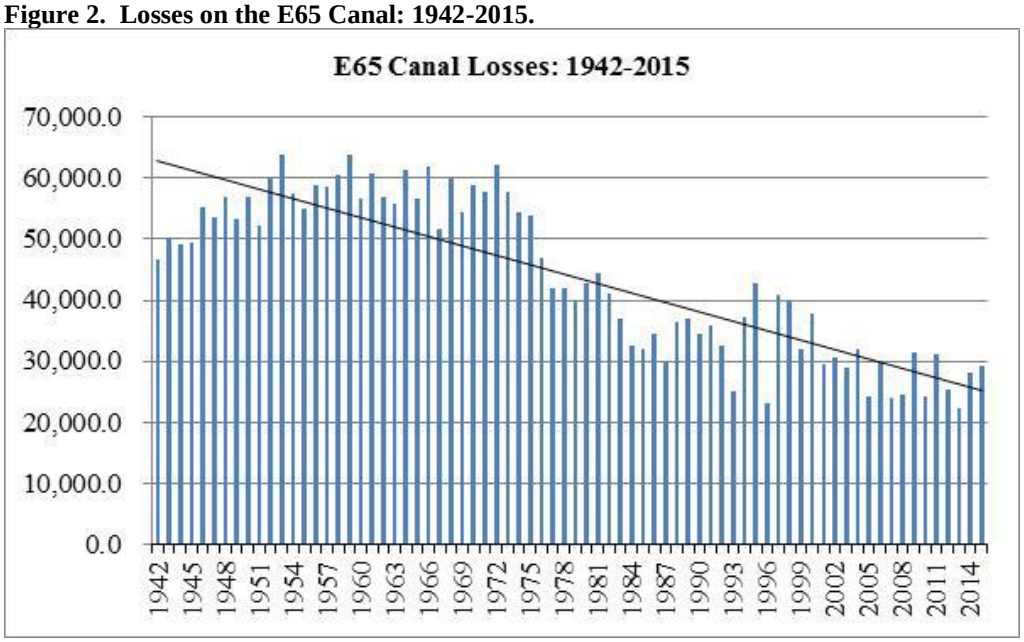
E65 Canal Modernization

The first water deliveries through the E65 canal began in 1941 at a rate of 12" per acre for the season and water was delivered on a three week rotation. In 1971, CH2M Hill developed a master plan[3] for Central to increase peak supply, provide irrigation water to more land acres, add efficiency to the system and improve operational control. The plan was implemented through 1977 with the goal of providing a seasonal 1.5 AF or 18" to contract acres with a 2-week delivery rotation. The irrigation improvements and Elwood Reservoir were constructed with operation beginning September of 1977.

Irrigation improvements have continued with membrane lining, pipelines and on-farm investments in center pivots, sub-surface drip irrigation systems and precision management tools that all work together to raise the efficiency. Figure 2 shows the losses (diversions minus deliveries) on the E65 Canal from our first delivery year through 2015.

[3] Project Report for Central Nebraska Public Power and Irrigation District: E65 Master Plan, November, 1971, CH2M Hill, Redding, CA.

Figure 2. Losses on the E65 Canal: 1942-2015.



A description of all field investigations made to substantiate the feasibility report (004.01 B);

Field Investigations

The soil, hydraulic and geologic field investigations were done along the E65 canal in the original construction and again in development of the E65 Master Plan in 1971. Given the slow nature of changes to soil and geologic properties, those investigations do not need to be revisited at this time. This section of canal is stable and Central does not have trouble with underground piping or other concerns. Central has an ongoing program of reading observation wells annually in April and October to map changes to groundwater levels across the District including this area. The interior of the Project canal section has been studied for sediment accumulation that may need to be removed prior to lining this section. Central has also determined the amount of rip-rap and upstart trees that will need to be removed prior to a lining. Central is very familiar with lining materials, the work of installing canal lining and the maintenance of the High Density Polyethylene (HDPE) 80-mil lining product that will be used here and has great confidence in the HDPE product. Sections that have been lined for 20 years are still in good shape and it is expected the product in those areas will be serviceable for many years to come.

Maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C);

List of Figures

Maps, figures and tables have been embedded in this document rather than shown in appendices for ease of reading on a computer screen. All maps, drawings and tables are listed here for reference.

A description of any necessary water and land rights and pertinent water supply and water quality information, if appropriate (004.01 D);

Water Rights & Supply

Water Supply for Irrigation Operations

Central maintains current water rights for our irrigation operations, including the E65 Canal and Elwood Reservoir.

A discussion of each component of the final plan including, when applicable (004.01 E);

Required geologic investigation (004.01 E 1);

Geologic Investigation

Phelps County is in the Central Plains of the Great Plains region of the United States. A geologic investigation was conducted for the original construction of the E65

Canal, but more recently, EA Engineering completed a study of the groundwater mound for Central[4]. As part of that work, north-south transects were set to identify the underlying geology. One of those transects, Transect C–C' is one mile west of the upstream end of the Project. Transect C–C' shows the land surface at elevation 2480', current groundwater elevation at 2400' and predevelopment groundwater level at 2330'. All of these elevations fall into the Hydrostratigraphic Unit 1 (yellow shaded area on Figure 3) or the Quaternary (Peorian) loess deposits common to this area. This unit is a wind deposition; composed mainly of silt–sized particles with small amounts of sand and clay–sized particles. It has low transmissivity but strong vertical fracture potential and is not used for irrigation well development. Unit 2 (the orange shaded area on Figure 3) lies directly below this silt deposition and is the Pleistocene alluvial deposits of gravels and sands with good water bearing potential. Unit 2 is a thin deposit between elevations 2255' and 2300', used extensively for irrigation and is generally hydrologically connected to streams.

Required hydrologic data (004.01 E 2);

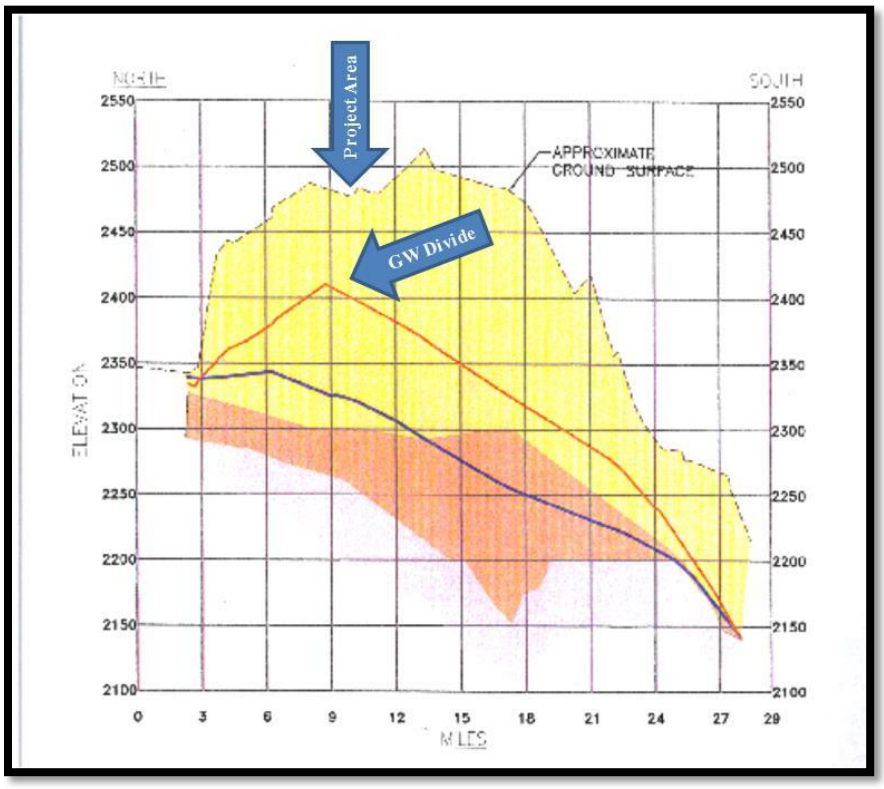
Hydrologic Investigation

The Central Office in Bertrand recorded an average annual rainfall of 22.43" through the 1946-2015 period; with a minimum of 9.10" and maximum of 37.15". Monthly rainfall amounts on average are highest in the April–June period and again in August. Irrigation is supplemental but necessary in the dry summer months for top yields of two major crops, corn and soybeans. There have been very few years scattered throughout the history of the District where crop water needs have been met by rainfall; in most years dryland corn will yield about 1/3 of the irrigated crop and in dry summers or consecutive drought years, dryland yield of both crops is near zero.

Central's project area is contained in the Platte Basin; however, seepage from the Central system began building a groundwater mound in 1942 to an extent that a new groundwater divide has formed in a line northwest to southeast, from roughly Elwood Reservoir to Minden. This particular canal section is well north of the Republican-Platte Basin surface water divide; however, the EA Study Transect C-C' shows it sits nearly on top of but just to the Republican Basin side of the groundwater divide. See Figure 3. Seepage from this section of the E65 canal heads south to the Republican River.

[4] Final Groundwater Evaluation Report: South Central Nebraska, EA Engineering Science and Technology, Inc., January 2014, Appendices B-C.

Figure 3. EA Report: groundwater profile along Transect C-C'.



Design criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3).

Design Criteria

This section explains the physical characteristics of the main components of the project. If the NRC approves the Project on July 1, 2016, Central will prepare specifications for the bidding process for the earthwork, rip-rap removal and installation of 80–mil HDPE lining. Since the award is in the middle of 2016, Central would plan on the installation following the 2017 irrigation season so the project is complete by January 1, 2018 and the canal can be filled for the 2018 irrigation season. Associated costs are listed in Question 3: Opinion of Probable Construction Costs and a cross-section of the canal with lining is shown in Figure 4. A photo of a previous E67 Canal lining project is shown as Figure 5.

Project constructed changes:

- Removal of riprap
- Purchase lining and installation: HDPE 80 mil liner, bank to bank
- Anchor lining around structures

Figure 4. Canal cross-section of the installed membrane lining.

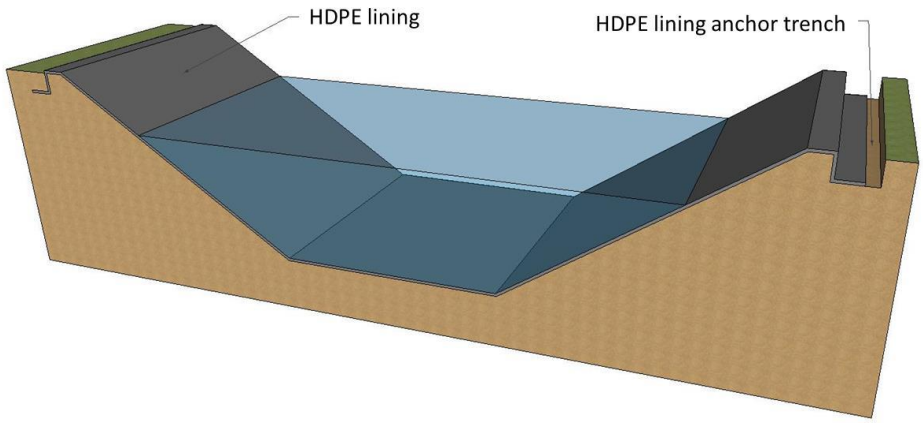


Figure 5. E67 Canal membrane-lined section: beginning of first fill.

1(b). If no (non-structural), submit data necessary to establish technical feasibility including, but not limited to the following (004.02):

A discussion of the plan of development (004.02 A); N/A

A description of field or research investigations utilized to substantiate the project conception (004.02 B); N/A

A description of the necessary water and/or land rights, if applicable (004.02 C); N/A
A discussion of the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D).
N/A

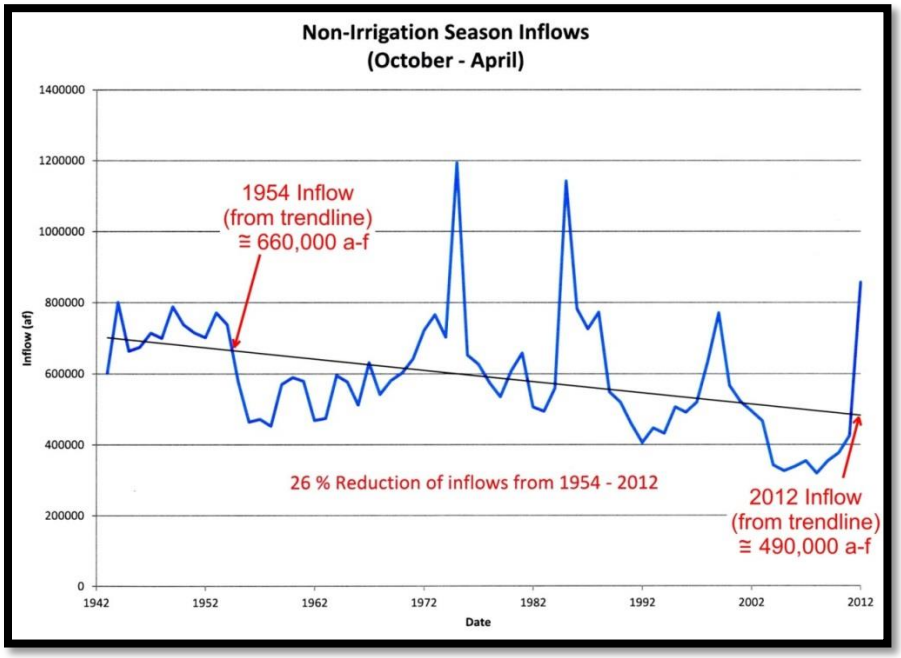
2. Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative.

Alternatives

The alternative to this plan that reduces seepage by 4,000 AF would be a similar membrane lining in another section of canal. Central looked at design specifications on a typical smaller canal lateral to determine the difference; the canal is similar to many of the small laterals in the irrigated area. Seepage is 1.25 cfs/mile, it is filled later than the main canals and has water for 100 days and the length of lining needed bank-to-bank is 50 ft. To achieve the 4,000 AF of water savings annually it would be necessary to line 16 miles of smaller canals with 4,224,000 sq. ft. of lining at a cost of $4,224,000 or a little more than double the cost of the Project. A higher percentage of lining is above water line in the smaller canals relative to a larger canal.

Another alternative is to address reduced inflows into Lake McConaughy. Figure 6 shows a trend of non-irrigation season depletions to Lake McConaughy inflows through the 1942-2012 period. Over the 1954-2012 period, a 26% reduction to inflows occurred.

Figure 6. Historic October-April depletions to inflows at Lake McConaughy.



Lytle Water Solutions, LLC (LWS) was retained by Central to study reductions in inflows to Lake McConaughy from groundwater pumping in the panhandle of Nebraska in 2009. LWS provided an estimate of more than 100,000 acre feet in annual depletions to inflows as a result of upstream groundwater pumping in the North Platte Natural Resources District[5] . A project to reduce impacts from pumping would be a comparable alternative. The North Platte Natural Resources and the Nebraska Department of Natural Resources District continue to work on the integrated management planning process and projects to increase streamflow into Lake McConaughy may be proposed.

3. Document all sources and report all costs and benefit data using current data, (commodity prices, recreation benefit prices, and wildlife prices as prescribed by the Director) using both dollar values and other units of measurement when appropriate (environmental, social, cultural, data improvement, etc.). The period of analysis for economic feasibility studies shall be fifty (50) years or with prior approval of the Director, up to one hundred (100) years [T261 CH 2 (005)].

Costs and Benefits

The cost to construct the Project, including canal preparation, capital construction costs and contingency costs are shown as Table 1. The project period will begin in July, 2016 and end January 1, 2018 with the actual construction occurring October, 2017 – through December 31, 2017. The manufacturer's estimate of the life-span of the HDPE lining is 50 years. O&M costs and replacement costs are shown as Table 2. Cost/benefit data represents only those tangible benefits internal to District operations. Many other tangible benefits exist to the State, PRRIP and the other agencies. Intangible benefits exist as well; both external tangible and intangible benefits will be discussed in more in detail in Sections 3.005.02. and 3.005.04.

- Describe any relevant cost information including, but not limited to the engineering and inspection costs, capital construction costs, annual operation and maintenance costs, and replacement costs. Cost information shall also include the estimated construction period as well as the estimated project life (005.01).

Opinion of Probable Construction Costs

Assumptions used for probable construction costs are: Water is in the canal for 135 days, seepage is 3 cfs/mile, width of the canal lining from anchor trench to anchor trench is 75 ft. and Project length is 5.0 miles.

A contingency of 30% was selected because of the wide variation in HDPE lining costs over the past two years. The lining cost estimate in 2014 was 47.5 cents per

[5] Analysis of Depletions to the North Platte River, Lytle Water Solutions, LLC, Highlands Ranch, CO, June 2009, p.9.

sq. ft. and the cost estimate in 2015 is 41 cents per sq. ft., a reduction of over 15% because of the close correlation to declining oil prices. The contingency is included in part to address the risk in oil price fluctuation.

Table 1. Opinion of probable construction costs.

Description	Quantity	Unit	Unit Price ($)	Total
Rip-rap removal	2,800	Feet	20.00	$56,000
Lining and installation	2,000,000	Sq. ft.	1.00	$2,000,000
Anchoring around structures	16	Each	2500.00	$40,000
Contingency (30%)				$628,800
Total				**$2,724,800**

Opinion of Probable Operation Costs

The 80-mil HDPE lining is expected to have a 50-year life. Central has not experienced any O&M on 80-mil lining projects in the past. There may be some sediment deposition on the inside corners of the canal. Unless capacity becomes an issue, the sedimentation will be left in place but Central's equipment can reach the bottom of this section from the road if necessary to remove sediment. Aquatic chemicals are not used in this section so no savings will occur. Central O&M is calculated as zero and the replacement cost is the 2017 Project cost without a contingency, adjusted for an escalation rate of 1.5% over the 50 year period. (See Table 2.)

Table 2. O&M & replacement costs.

	Total $	Annual $
O&M	0	0
Replacement[1]	4,478,767	89,576

[1]Assume a 50-year lining lifespan.

- Only primary tangible benefits may be counted in providing the monetary benefit information and shall be displayed by year for the project life. In a multi-purpose project, estimate benefits for each purpose, by year, for the life of the project. Describe any intangible or secondary benefits separately. In a case where there is no generally accepted method for calculation of primary tangible benefits describe how the project will increase water sustainability, such that the economic feasibility of the project can be approved by the Director and the Commission (005.02).

Tangible and Intangible Benefits

The tangible benefits to the District include increased hydro-power generation because some of the water now lost to seepage would go through two additional generating units. We estimate this benefit as 1,000 AF of additional water available for

hydro-generation annually at $10/AF (inflation of 1.5% and discount rate of 5%) over the 50-year period. The present value of this benefit is approximately $233,000 in 2015 dollars.

Recreation at Lake McConaughy has continued to increase with more than one million recreational visitor days at Lake McConaughy alone in recent years. The benefit from this Project to recreation will begin in 2018. It is not possible to quantify this benefit.

Intangible benefits will be provided to the agriculture and community sectors because the likelihood of future allocation years is reduced. The following list describes those benefits but it may not be all inclusive;

- Socio-economic benefits to Platte Basin communities in terms of jobs available, new business or ag-related services kept;
- The ability to retain public services: schools, clinics, grocery stores, fire and police protection; and
- Greater retention of young farmers and farm families, i.e., the ability of fathers to bring sons and/or daughters and their families into their farm operation prior to retirement.

- All benefit and cost data shall be presented in a table form to indicate the annual cash flow for the life of the proposal, not to exceed 100 years (005.03).

Cost-Revenue Table

The rules governing the administration of the Water Sustainability Fund state, "In the case of proposals for which there is no generally accepted method for calculation of primary tangible benefits and if the proposal will increase water sustainability, the economic feasibility of such proposal shall be demonstrated by such method as the Director and the Commission deem appropriate."

The Project will increase the surface water available in an overappropriated basin by 4,000 AF and thereby take a step to move an overappropriated basin to fully appropriated. If this project is approved, the cost to the Water Sustainability Fund is 60% of the project cost of $2,738,800 or $1,643,280. To determine if this cost is reasonable, a comparison to alternate methods of increasing water supply will be made.

In Phelps County Nebraska during 2015, the cost to purchase certified irrigated acres is to convert dryland to irrigated ranges from $3,500/acre to $4,250/acre with an average at $3,750. A purchase of certified irrigated acres would allow full irrigation of each acre using groundwater which would range from 9 inches/acre to 14 inches/acre depending on the type of irrigation used. If 12 inches/acre were used, then to make 3,000 acre feet available for irrigation, 3,000 acres of certified irrigated acres would need

to be purchased. The cost of 3,000 acre feet of water using this approach is $11,250,000. This cost is much more than the estimated expenditure from the WSF of $1,643,280.

Installation of membrane lining projects on irrigation systems have been implemented over a number of years with reliable results. Therefore from both a technical and financial perspective the Project is feasible.

Benefits to Central water users will be additional drought protection in Lake McConaughy. Central water users would have a full water supply for more years through the 50-year period. This project will assist other work being done in the basin to help return the basin to a fully appropriated state.

Table 3. Project cost-revenue.

Year		Cost ($)	Revenue ($)
			Hydro Generation
0	2015	0	
	Feasibility study, site inspection		
1	2016		
	Project award and bid specs	7,000	
2	2017		
	Advertising	7,000	
	Award of bids		
	Remove rip-rap	56,000	
	Lining and installation	2,000,000	
	Anchoring lining around structures	40,000	
	Operation and maintenance costs	0	
	Contingency @ 30%	628,800	
1-53	Total	2,738,800	233,000

- In the case of projects for which there is no generally accepted method for calculation of primary tangible benefits and if the project will increase water sustainability, the economic feasibility of such proposal shall be demonstrated by such method as the Director and the Commission deem appropriate (005.04).

Additional Primary Tangible Benefits

External primary benefits include;

- Benefits to stream flow in the Platte River in the non-irrigation and in the irrigation season;
- Benefits to recreation at Lake McConaughy;
- Benefits to the fishery at Lake McConaughy; and
- Benefits to other basin water users from a gain in basin supply.

4. Provide evidence that sufficient funds are available to complete the proposal.

The Central Board of Directors authorized the submission of this application by a vote in a Special Board Meeting on December 28th, 2015. All funds are available for Central's 40% share ($1,095,520) of the Project in Central's 2016 budget. Upon WSF grant funding approval in July, 2016, funds for Central's share of the Project will be set aside in a dedicated reserve fund.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace).

Central is not seeking a loan but rather a grant and there are no reimbursable costs. Central has sufficient annual District revenue from irrigation water delivery fees; estimated at $3,639,249 for calendar/fiscal year 2016, to cover OM&R. From past experience with other sections of canal lined with this product, O&M through this Project will be reduced (to near zero) when lined relative to the unlined state. The life of the HDPE lining product is estimated at 50 years.

6. If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal.

N/A

7. Describe how the plan of development minimizes impacts on the natural environment.

The project uses the existing footprint of a section of the E65 Canal and no new land is required for construction. It reduces a portion of the surface water irrigation demand and part of that water will remain in storage in Lake McConaughy and the remainder increases natural flow in the Platte River below Overton, Nebraska. The project is a step toward sustainability of the Platte River and decreases the surface water diversion requirement by 4,000 AF annually at the E65 Canal headgate for the 50-year life of the project.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.

The Central Nebraska Public Power and Irrigation District is a political subdivision of the State of Nebraska, organized by Nebraska State Statute, Chapter 70, article 6 which grants authority to a publicly elected Board of Directors to administer the affairs of the District. Central owns the land where the canal is located and is responsible for operation and maintenance of the irrigation canal.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state.

Central has designed this water Project to increase the efficiency of our irrigation system to help meet the irrigation demand of Central's customers, In addition, the Project will help the State meet its obligations in an overappropriated area of the Platte River under the terms of LB 962 (2004). Integrated Management Plans of the five natural resource districts in the overappropriated basin are designed to reach a fully appropriated state over time. In addition, the Basin-Wide Integrated Management Plan is designed to bring the basin back to a fully appropriated condition over time. This project is a small step to assist with those efforts.

10. Are land rights necessary to complete your project?

YES☒ NO☐

Land Rights

Central owns the 92.80 acres of land where the E65 Canal MP 23.7-0.3 to 5.3 is located and all work will occur within the existing canal footprint without further acquisition. Legal descriptions and land acres of the current land holdings are shown in Table 4. Two areas are available for staging materials and equipment. (See Map 3.)

If yes, provide a complete listing of all lands involved in the project.

Listing of All Project Lands

Table 4. Land ownership by canal segment in Project area.

E65 Canal Segment	LEGAL	ACRES	COUNTY
23.7-0.3 to 0.9	SW¼ Sec.17-T7N-R20W	11.69	PHELPS
23.7-0.9 to 1.4	NW¼ Sec.17-T7N-R20W	9.65	PHELPS
23.7-1.4 to 1.5	SW¼ Sec.8-T7N-R20W	0.72	PHELPS
23.7-1.5 to 1.9	SE¼ Sec.8-T7N-R20W	12.76	PHELPS
23.7-1.9 to 2.7	NW¼ Sec.16-T7N-R20W	11.76	PHELPS
23.7-2.7 to 3.6	NE¼ Sec.16-T7N-R20W	17.32	PHELPS
23.7-3.6 to 4.1	NW¼ Sec.15-T7N-R20W	9.8	PHELPS
23.7-4.1 to 5.3	E½ Sec.15-T7N-R20W	19.1	PHELPS
Total		92.80	

If yes, attach proof of ownership for each easements, rights-of-way and fee title currently held.

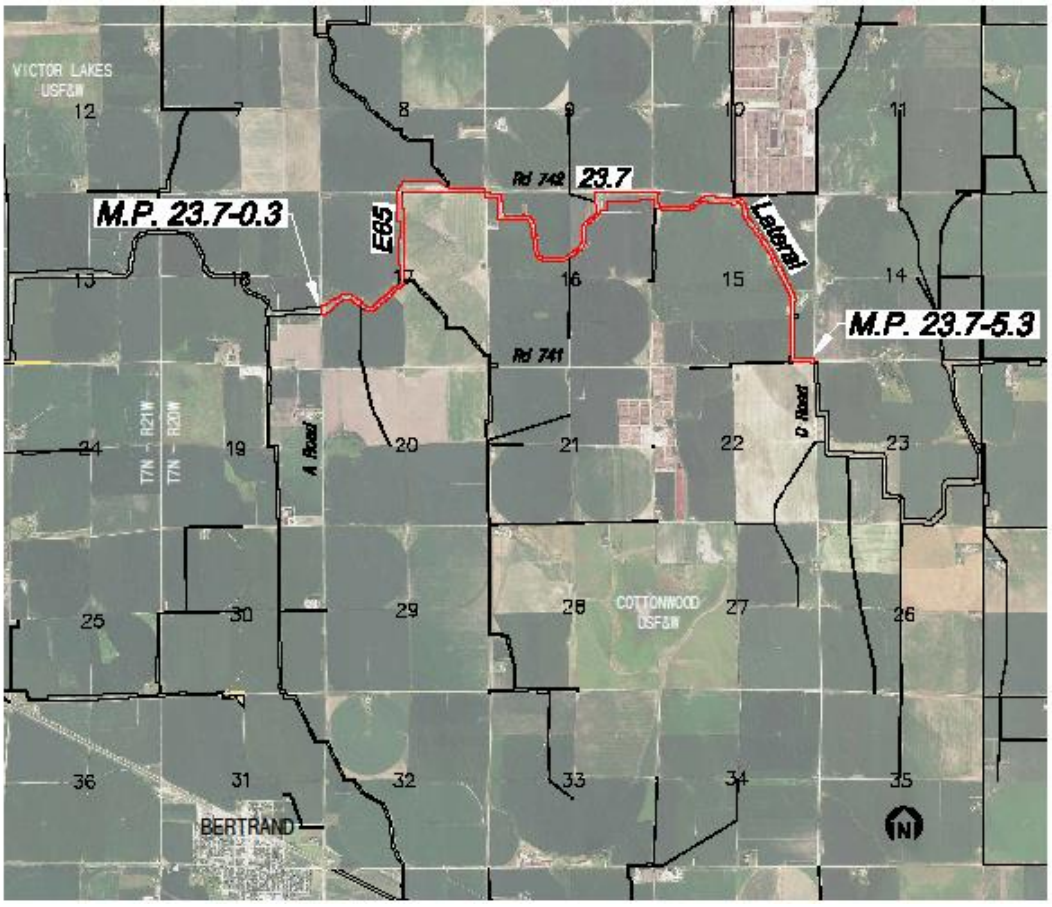
Proof of Ownership of Project Lands

Central warranty deeds cover the entire E65 Canal lining project area, E65-23.7-0.3 to E65-MP 23.7-5.3 as shown below in Table 5. Warranty deeds are recorded in the office of the Phelps County, Neb. Register of Deeds and plat maps are also stored at our District Headquarters Office in Holdrege, Neb. Map 3 of this ownership follows.

Table 5. CNPPID deeded acres through Project area: E65-23.7-0.3 to E65-23.7-5.3.

LEGAL	ACRES	DOC	RECORD INFO	COUNTY
SW¼ Sec.17-T7N-R20W	11.69	Warranty Deed	Book 23-Deeds, Page 254, 12/30/1938	PHELPS
NW¼ Sec.17-T7N-R20W	9.65	Warranty Deed	Book 23-Deeds, Page 307, 4/10/1939	PHELPS
SW¼ Sec.8-T7N-R20W	0.72	Warranty Deed	Book 25-Deeds, Page 348, 12/27/1938	PHELPS
SE¼ Sec.8-T7N-R20W	12.76	Warranty Deed	Book 23-Deeds, Page 306, 4/8/1939	PHELPS
NW¼ Sec.16-T7N-R20W	11.76	Warranty Deed	Book 23-Deeds, Page 234, 12/9/1938	PHELPS
NE¼ Sec.16-T7N-R20W	17.32	Warranty Deed	Book 23-Deeds, Page 291, 3/2/1939	PHELPS
NW¼ Sec.15-T7N-R20W	9.8	Warranty Deed	Book 23-Deeds, Page 356, 4/24/1939	PHELPS
E½ Sec.15-T7N-R20W	19.1	Warranty Deed	Book 23-Deeds, Page 235, 12/9/1938	PHELPS
Total	92.80			

Map 3. Warranty deeded land along E65-23.7-0.3 to 5.3.



If yes, provide assurance that you can hold or can acquire title to all lands not currently held.

Proof of Acquisition Rights to Lands Not Currently Held

No new lands acquisitions are needed for the Project; the plan uses the footprint of the existing canal. Central owns the land on either side of the top of the canal and there are access roads on either side. The roads also lie within the Central–owned right–of–way so that no temporary right is needed for canal access or staging through the construction period.

11. Identify how you possess all necessary authority to undertake or participate in the project.

The Central Nebraska Public Power and Irrigation District is a political subdivision of the State of Nebraska, organized by Nebraska State Statute, Chapter 70, article 6 which grants authority to a publicly elected Board of Directors to administer the affairs of the District. Central owns the irrigation canal that is being lined and is responsible for operation and maintenance of the canal.

12. Identify the probable environmental and ecological consequences that may result as the result of the project.

Several positive environmental and ecological consequences are known for this Project: 1) A higher efficiency in the Central irrigation system will put an estimated annual 3,000 AF of water in Lake McConaughy and add 1,000 AF of water to the Platte River flow below Overton, NE; 2) better control of the water being saved will make it available at a time and place of higher beneficial use, i.e., it can provide drought protection in subsequent dry years for crop production and/or in-stream flow, 3) There will be a reduction in local recharge, but impacts to Platte River accretions will be offset by the direct increases in stream flow; 4) There will be added water volume for benefits to recreation, wildlife, and the fishery at Lake McConaughy. 5) There will be additional hydropower generation with no emissions.

Section C.

NRC SCORING

In the NRC's scoring process, points will be given to each project in ranking the projects, with the total number of points determining the final project ranking list.

The following 15 criteria constitute the items for which points will be assigned. Point assignments will be 0, 2, 4, or 6 for items 1 through 8; and 0, 1, 2, or 3 for items 9 through 15. Two additional points will be awarded to projects which address issues determined by the NRC to be the result of a federal mandate.

Notes:

- The responses to one criterion *will not* be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine which projects receive funding.

- There is a total of 69 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted in parenthesis. Once points are assigned, they will be added to determine a final score. The scores will determine ranking.

- The Commission recommends providing the requested information and the requests are not intended to limit the information an applicant may provide. An applicant should include additional information that is believed will assist the Commission in understanding a proposal so that it can be awarded the points to which it is entitled.

Complete any of the following (15) criteria which apply to your project. Your response will be reviewed and scored by the NRC. Place an N/A (not applicable) in any that do not apply, an N/A will automatically be placed in any response fields left blank.

1. Remediates or mitigates threats to drinking water;
   - Describe the specific threats to drinking water the project will address.
   - Identify whose drinking water, how many people are affected, how will project remediate or mitigate.
   - Provide a history of issues and tried solutions.
   - Provide detail regarding long range impacts if issues are not resolved.

   N/A for this Project. However, it is important to note that Central's project has and will continue to provide incidental recharge and at times intentional recharge from excess Platte River flows to the Tri-Basin NRD. High nitrate concentrations exist in the Tri-basin NRD. Nitrate concentrations in the water Central supplies for irrigation and incidental recharge are low at 0.1

ppm (September, 2013). To the extent that recharge of the aquifer occurs from canal seepage, a dilution of the nitrate concentration occurs in the aquifer.

2. Meets the goals and objectives of an approved integrated management plan or ground water management plan;
   - Identify the specific plan that is being referenced including date, who issued it and whether it is an IMP or GW management plan.
   - Provide the history of work completed to achieve the goals of this plan.
   - List which goals and objectives of the management plan the project provides benefits for and how the project provides those benefits

Integrated Management Plans

- Integrated Management Plan of the South Platte NRD, effective September 14, 2009
- Integrated Management Plan of the North Platte NRD, effective September 14, 2009
- Integrated Management Plan of the Twin Platte NRD, effective September 15, 2009
- Integrated Management Plan of the Tri-Basin NRD, effective September 15, 2009
- Integrated Management Plan of the Central Platte NRD, effective September 15, 2009
- Basin-Wide Plan for Joint Integrated Water Resources Management of Overappropriated Portions of the Platte River Basin, Nebraska, effective September 11, 2009

Central's Project will help meet the first and common goal of all five IMPs; that is to help achieve and sustain a fully appropriated condition in the overappropriated area. Central's ability to deliver water to irrigation customers depends on the success of the integrated management plan efforts to meet that goal and the District is taking action to help them achieve this outcome. Conservation work in the District began in earnest in the 1970's with rehabilitation of the irrigated area and installation of a number of pipelines and compacted earth lining projects. On Central's side of the irrigation operation, pipelines have been added to replace small laterals to save seepage and evaporation, canal sections have been lined and our base rate for water delivery service has been reduced from 15" to 9" for the 18" contracts. There is a per inch charge after 9" of delivery to encourage conservation. Elwood Reservoir and portions of the main canals have been used for intentional recharge of groundwater in the TBNRD in times of excess flow in the river.

On the Central-served farms, producers are replacing gated pipe systems with the much more efficient center pivots as finances allow. Central has provided incentives and received an Agricultural Water Enhancement Program grant from NRCS that provided cost share for 30 new pivots and 4 sub-surface drip systems. Pivot swing arms, 3-tower pivots and sub-surface drip are replacing some of the gated pipe systems on pivot corners. Central is working with the PRRIP for the 2016 season on a Pilot Program to suspend irrigation on lands for a year. Central received a grant from NET for telemetry equipment on the E67 canal farms that is beginning to provide producers with near real-time precision management tools for assessing soil moisture and weather conditions.

Central works with Tri-Basin NRD and the UNL Extension on many information and educational meetings related to conservation tillage and conservation management. All NRDs and agencies in the overappropriated area are invested heavily in the fully appropriated goal.

Central has implemented a number of recharge projects in six of the last eight years under contract with the NDNR and/or Tri-Basin NRD to provide recharge from flows in excess of FWS target flows. These projects help the TBNRD meet its integrated management goals. In addition, Central entered into a Water Service Agreement with the Platte River Recovery Implementation Program and the NDNR to construct and operate the J-2 Regulating Reservoir project. The J-2 Project will help the TPNRD, TBNRD and CPNRD meet their IMP goals.

This project will take another step toward accomplishing the goal of achieving and sustaining a fully appropriated status. A reduction in seepage from the E65 canal of 4,000 AF annually will provide added storage water in Lake McConaughy (3,000 AF) and increase streamflow below Overton, Nebraska (1,000 AF) annually.

3. Contributes to water sustainability goals by increasing aquifer recharge, reducing aquifer depletion, or increasing streamflow;

   List the following information that is applicable:

   - The location, area and amount of recharge;
   - The location, area and amount that aquifer depletion will be reduced;
   - The reach, amount and timing of increased streamflow. Describe how the project will meet these objectives and what the source of the water is;
   - Provide a detailed listing of cross basin benefits, if any.

   Benefits include 1,000 AF of annual increased Platte River streamflow below Overton, Nebraska; coming at a beneficial time in the spring when Central has mandatory releases from Lake McConaughy and will be reducing the diversions into the E65 headgate by 15 cfs or 30 AF per day. That water will be released back to the Platte River at the J-2 river return near Lexington. Surface water elevation will increase at Lake McConaughy with the addition of 3,000 AF annually, from water that will not be released to cover the seepage losses in this section of canal for the irrigation season. That water will provide drought protection for agriculture producers on Central's system, and provide benefits to recreation and the fishery. The cumulative effect of adding 3,000 AF annually to the lake may also provide additional streamflow in the Platte River as the mandatory, non-irrigation season releases increase as lake levels increase.

4. Contributes to multiple water supply goals, including, but not limited to, flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation of water resources, and preservation of water resources;

   - List the goals the project provides benefits.
   - Describe how the project will provide these benefits

- Provide a long range forecast of the expected benefits this project could have versus continuing on current path.

The Project goals and benefits are to:

- Increase storage water volume in Lake McConaughy to provide benefits to recreation and the fishery at the lake and provide drought protection for Central's agricultural producers in Lincoln, Dawson, Gosper, Phelps and Kearney counties;
- Increase the efficiency of the Central irrigation system;
- Help achieve and sustain a fully appropriated condition in the overappropriated reach of the Platte River;
- Increase river flow to help offset depletions in the big bend reach of the Platte River.

The Project will provide these benefits by eliminating 4,000 AF of annual seepage through a 5-mile section of the E65 irrigation canal in western Phelps County. Approximately 3,000 AF will be retained at Lake McConaughy annually and there will be 1,000 AF of increased stream flow annually below Overton, Nebraska.

The impetus for this Project is the recent years of water allocations due to depletions of the inflows to Lake McConaughy from groundwater pumping and conservation activities. Central delivered a full supply of crop water to all its producers from 1942 until 2005. Allocations were necessary from 2005-2009 and again in 2013-2015 or in eight of the last eleven years. More pressure was put on the local aquifer in those years. Timely rains saved crops in the years when the seasons had to be cut short but producers cannot depend on rains that may not appear with millions of dollars of crop at stake. Without further water sustainability projects, the future will most likely hold more allocated irrigation seasons for our system. A zero delivery year from Lake McConaughy would be devastating for agriculture in this area and the low lake elevation in Lake McConaughy that would require that zero delivery would be devastating to recreational interests and the fishery there.

5. Maximizes the beneficial use of Nebraska's water resources for the benefit of the state's residents;

- Describe how the project will maximize the increased beneficial use of Nebraska's water resources.
- Describe the beneficial uses that will be reduced, if any.
- Describe how the project provides a beneficial impact to the state's residents.

The Project maximizes the increased beneficial use of Nebraska water resources by removing seepage from an area where 5 miles of a main canal are condensed in to a three mile area and disproportionately large recharge occurs. The benefits will accrue to storage in Lake McConaughy and additions to Platte River flow. Increased storage in Lake McConaughy benefits agriculture producers, the fishery and the recreational users of the lake. It can be released for irrigation in a subsequent year and delivered to farms to meet crop water needs. Increasing flows in the Platte River will increase flows below Overton, NE in the big-bend reach of the Platte River in the spring.

Recharge to the aquifer near the canal will be reduced and with recharge continuing from other canals and Elwood Reservoir the impacts may be minimal. The water table in this area is well above the water bearing sand and gravel layer and the Ogallala aquifer beneath it.

Agriculture producers on the Central system will have an improved water supply and increased drought protection. Groundwater users in the overappropriated areas will move a step away from potential water allocations. Recreational users will benefit from the cumulative effect of the annual 3,000 AF of water addition in Lake McConaughy. Visitor days increase at Lake McConaughy with a good water supply; that will support the economic activity at the lake and in the Ogallala community.

6. Is cost-effective;

- List the estimated construction costs, O/M costs, land and water acquisition costs, alternative options, value of benefits gained.
- Compare these costs to other methods of achieving the same benefits.
- List the costs of the project.
- Describe how it is a cost effective project or alternative.

Total construction costs are expected to be $2,724,800. This includes;

▪ Rip-rap removal from the open, earthen canal	$56,000
▪ 80-mil HDPE lining material and installation	$2,000,000
▪ Anchoring lining around structures	$40,000
▪ 30% Contingency	$628,800

O/M costs, land and water acquisition costs are zero.

Alternative options and associated costs–

Central looked at two other sites for this project. One was along the south boundary of the Platte-Republican Basins. It would be near the same cost as this site but the canal has been used for intentional recharge with excess flows to the Republican Basin in our work with the Tri-Basin NRD. That site was rejected at this time. A second study was done on a smaller canal with seepage losses of 1.25cfs/mile; typical of the smaller laterals. Measurements taken showed 4,224,000 sq. ft. of lining material (double the material needed for this Project) would have to be purchased to line 16 miles of the smaller canals to achieve the same water savings. The larger lining requirement is due to more material being needed above water line. That project was rejected on a cost basis.

Project costs –

Project costs include construction costs, $7,000 to prepare all bid specifications and $ $7,000 to advertise, provide site inspections and award bids. Total cost is expected to be $2,738,800.

Cost effectiveness –

The rules governing the administration of the Water Sustainability Fund state, "In the case of proposals for which there is no generally accepted method for calculation of primary tangible benefits and if the proposal will increase water sustainability, the economic feasibility of such proposal shall be demonstrated by such method as the Director and the Commission deem appropriate."

The Project will increase the surface water available in an overappropriated basin by 4,000 AF and thereby take a step to move an overappropriated basin to fully appropriated. If this project is approved, the cost to the Water Sustainability Fund is 60% of the project cost of $2,738,800 or $1,643,280. To determine if this cost is reasonable, a comparison to alternate methods of increasing water supply will be made.

In Phelps County Nebraska during 2015, the cost to purchase certified irrigated acres to convert dryland acres to irrigated acres ranges from $3,500/acre to $4,250/acre with an average at $3,750. A purchase of certified irrigated acres would allow full irrigation of each acre using groundwater which would range from 9 inches/acre to 14 inches/acre depending on the type of irrigation used. If 12 inches/acre were used, then to make 3,000 acre feet available for irrigation, 3,000 acres of certified irrigated acres would need to be purchased. The cost of 3,000 acre feet of water using this approach is $11,250,000. This cost is much more than the estimated expenditure from the WSF of $1,643,280.

Installation of membrane lining projects on irrigation systems have been implemented over a number of years with reliable results. Therefore from both a technical and financial perspective Central believes the Project is feasible.

Benefits to Central water users will be additional drought protection in Lake McConaughy. Central water users would have a full water supply for more years through the 50-year period. This project will assist other work being done in the basin to help return the basin to a fully appropriated state.

7. Helps the state meet its obligations under interstate compacts, decrees, or other state contracts or agreements or federal law;

- Identify the interstate compact, decree, state contract or agreement or federal law.
- Describe how the project will help the state meet its obligations under compacts, decrees, state contracts or agreements or federal law.
- Describe current deficiencies and document how the project will reduce deficiencies.

N/A

8. Reduces threats to property damage or protects critical infrastructure that consists of the physical assets, systems, and networks vital to the state or the

Untied States such that their incapacitation would have a debilitating effect on public security or public health and safety;

- Identify the property that the project is intended to reduce threats to.
- Describe and quantify reductions in threats to critical infrastructure provided by the project and how the infrastructure is vital to Nebraska or the United States.
- Identify the potential value of cost savings resulting from completion of the project.
- Describe the benefits for public security, public health and safety.

N/A

9. Improves water quality;

- Describe what quality issue(s) is/are to be improved.
- Describe and quantify how the project improves water quality, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- Describe other possible solutions to remedy this issue.
- Describe the history of the water quality issue including previous attempts to remedy the problem and the results obtained.

N/A for this Project. However, it is important to note that Central's project has and will continue to provide incidental recharge and at times intentional recharge from excess Platte River flows to the Tri-Basin NRD. High nitrate concentrations exist in the Tri-basin NRD. Nitrate concentrations of water that Central supplies for irrigation and incidental recharge are low at 0.1 ppm. To the extent that recharge of the aquifer occurs from canal seepage, a dilution of the nitrate concentration occurs in the aquifer.

10. Has utilized all available funding resources of the local jurisdiction to support the program, project, or activity;

- Identify the local jurisdiction that supports the project.
- List current property tax levy, valuations, or other sources of revenue for the sponsoring entity.
- List other funding sources for the project.

Central is the supporter and project sponsor; it is also a political subdivision of the State of Nebraska. Water authority has been granted to a duly elected Board of Directors of the public power and irrigation district.

Central does not have taxing authority; it receives the majority of its funding from hydroelectric generation revenues and irrigation revenues. Other revenue sources are lake lot lease fees, rental fees and other. Central will receive some offsetting revenues from increased

hydro generation over the 50 year period. However, these revenues are less than 25% of Central's contribution.

No other funding is available for this Project except from the State of Nebraska through the Water Sustainability Fund. Central believes that this is a low-cost investment for the water return to the river and one that is a good use of funds for both Central and the State of Nebraska.

11. Has a local jurisdiction with plans in place that support sustainable water use;

- List the local jurisdiction and identify specific plans being referenced that are in place to support sustainable water use.

Central's Strategic Plan includes Mission and Vision Statements:

Mission Statement

"The mission of the central Nebraska Public Power and Irrigation District is to serve the agricultural-based community in the region by protecting and utilizing the natural resources available to us in a sustainable and ecologically balanced manner to provide surface water irrigation, ground water recharge, electric power and recreational opportunities while preserving and enhancing our quality of life and the natural environment in which we live."

Vision Statement

"It is our vision that the Central Nebraska Public Power and Irrigation District implement its Mission by becoming a national and worldwide leader in the area of integrated water resource management.

To realize this vision, we must pursue and adopt coalition opportunities, management techniques, technological advances and sustainable practices that promote conjunctive water use, water quality protection, agricultural efficiencies, effective water conservation, abundant recreation opportunities, fish and wildlife habitat diversity and integrity and efficient energy generation.

It is important that these activities be undertaken with the abiding conviction in, and understanding of, our over-riding obligation to be good stewards of the region's environment and its land and water resources."

- Provide the history of work completed to achieve the goals of these plans.

Large projects that have been completed to complement the Mission and Vision Statement include:

- Modernization of the E67 Irrigation System – Lining and pipeline improvements to over 5,000 acres that reduced seepage by over 5,000 acre feet per year;
- Rehabilitation of three hydroelectric power plants to increase efficiency and capacity;
- Extend the life of 5 siphons on the E-65 irrigation canal system;

- Replace the pumps at Elwood Reservoir to increase the life and efficiency; and
- Develop new irrigation water service agreements with a nine-inch base allocation.

- List which goals and objectives this project will provide benefits for and how this project supports or contributes to those plans.

The Mission identifies the responsibility to provide surface water irrigation and groundwater recharge. In most years, we have adequate water supplies to do both. However in 8 of the last 11 years, we have allocated the surface water deliveries. This project will improve the possibility that those allocation years will be less in the future.

- Describe and quantify how the project supports sustainable water use, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.

Central's project provides direct surface water deliveries to over 109,000 acres while providing groundwater recharge benefitting over 310,000 acres of groundwater irrigation (recognized by the State in the U-2 and U-12 Incidental Recharge water rights). The project will improve the ability to provide the surface water irrigation benefit.

- List all stakeholders involved in project.

Stake holders of this project are all those involved with the Joint Basin-Wide Plan; The State of Nebraska, North Platte, South Platte, Twin Platte, Tri-Basin and Central Platte NRDs, the Platte River Recovery Implementation Program, recreational users of Lake McConaughy and the fishery, NGPC, wildlife and conservation groups and agriculture producers using both surface and groundwater as an irrigation source.

- Identify who benefits from this project.

Direct 50-year benefits are to;

- Central irrigation customers who have had to manage crop production through eight years of water allocations out of the last eleven years;
- Stream flow in the Platte River below Overton, Nebraska; and
- Recreation and the fishery at Lake McConaughy who will see increased lake levels.

Indirect 50-year benefits are to;

- Nebraska water users other than Central customers; both groundwater and surface water agriculture producers
- Municipalities who depend on Platte River for recharge for municipal wells
- Nebraska Department of Natural Resources, Platte River Recovery Implementation Program, North Platte, South Platte, Twin Platte, Central Platte and Tri-Basin NRDs

12. Addresses a statewide problem or issue;

- List the issues or problems addressed by the project and why they should be considered statewide.

NDNR designated the Nebraska portions of the Platte River Basin upstream of the Kearney Canal Diversion Dam at Elm Creek (lands west of Highway 183 to the Wyoming state line) overappropriated on September 15, 2004. Integrated plans within five natural resources districts have been developed with a common goal to return this area to a fully appropriated condition.

- Describe how the project will address each issue and/or problem.

The Project will reduce seepage from a 5-mile section of the E65 canal to save 4,000 AF annually. The saved water will provide 1,000 AF of additional streamflow annually to the river below Overton, Nebraska and it will allow 3,000 AF to remain in Lake McConaughy annually for irrigation and to the benefit of recreation and the fishery at the lake. This Project will make a small step toward moving the overappropriated portion of the Platte Basin in Nebraska to a fully appropriated status.

- Describe the total number of people and/or total number of acres that would receive benefits.

Primary benefits will be to Central's irrigation customers who will have an added volume of water in storage at Lake McConaughy for drought protection. In 2015, Central served 109,152 acres. The profit from the irrigated crop yield to the landowners and tenants is the base of the local economy and it affects every service provider in the local communities. The products of production are also relied upon in the world market. Much of the local soybean crop goes to Japan for oil and much of the corn crop is feedstock for ethanol production and is used to finish livestock for market.

- Identify the benefit, to the state, this project would provide.

This Project will help the State of Nebraska take a step to move the overappropriated portion of the Platte Basin closer to a fully appropriated status.

13. Contributes to the state's ability to leverage state dollars with local or federal government partners or other partners to maximize the use of its resources;

- List other funding sources or other partners, and the amount each will contribute, in a funding matrix.

There are no other partners for this Project, it will be Central and the State of Nebraska through the WSF in a 40/60 % split.

- Describe how each source of funding is made available if the project is funded.

Funding for Central's 40% of the Project will come from District revenue which is supplied by the irrigation customers and electric consumers.

- Provide a copy or evidence of each commitment, for each separate source, of match dollars and funding partners.

N/A

- Describe how you will proceed if other funding sources do not come through.

N/A

14. Contributes to watershed health and function;

- Describe how the project will contribute to watershed health and function in detail and list all of the watersheds affected.

The Project contributes to watershed health and function by moving the overappropriated sub-basin of the Platte River a step closer to a fully appropriated state. As more water is available in the river to meet target flows through this area of shortage and elsewhere, water sustainability can become a reality for the Platte Basin. The cumulative benefits of this Project will be substantial over the 50-year life of the HDPE liner. Benefits of the Project will affect the North Platte and Platte River segments from Lake McConaughy to points downstream of Overton, NE.

15. Uses objectives described in the annual report and plan of work for the state water planning and review process issued by the department.

- Identify the date of the Annual Report utilized.

The Annual Report and Plan of work for the Nebraska State Water Planning and Review Process, September 2014 will be used here.

- List any and all objectives of the Annual Report intended to be met by the project

NDNR objectives listed in this Report are to "1) maintain data, information and analysis capabilities for water planning, including specific programs for collecting, maintaining, and distributing information on streamflows, as well as analyzing water uses and water supplies across the state; 2) provide staff and resources to support planning and implementation of water resource projects; 3) support locally developed water management plans for managing hydrologically connected water supplies; 4) provide resources to map and identify areas vulnerable to flood damage; and 5) provide coordination of federal agencies, state agencies, local natural resources districts (NRDs) and other water interests for the development of water resources programs and projects."

Central believes this Project fits with NDNR objectives 3 and 5.

- Explain how the project meets each objective.

3. The Central Project is a locally developed, economical water management plan designed to make best use of seepage water from an area of disproportionately large loss per land acre. Saving it in storage and providing additional Platte River flow are benefits worth an investment of this type.

5. Central's project will take a step to help the NDNR and the natural resource districts achieve a fully appropriated state. Numerous meetings are held to develop plans and projects to reach this goal.

16. Federal Mandate Bonus. If you believe that your project is designed to meet the requirements of a federal mandate which furthers the goals of the WSF, then:

- Describe the federal mandate.
- Provide documentary evidence of the federal mandate.
- Describe how the project meets the requirements of the federal mandate.
- Describe the relationship between the federal mandate and how the project furthers the goals of water sustainability.

N/A

Section D.

PROJECT DESCRIPTION

1. Overview

In 1,000 characters *or less*, provide a brief description of your project including the nature and purpose of the project and objectives of the project.

Central's project protects the ability of future generations to meet their water needs in the Platte Basin and specifically takes a step to move an over-appropriated sub-basin toward a fully appropriated status as required by LB 962. Improving the efficiency of the Central irrigation system will accumulate additional water in Lake McConaughy for agriculture producers, recreation and the fishery, increase river flow for endangered species work and provide additional hydropower generation. The Project construction will add an 80-mil High Density Polyethylene geosynthetic liner to an existing 5-mile segment of the E65 main canal to eliminate all seepage; estimated at 4,000 AF annually. Our main canals must follow the highest land contour; this segment is concentrated into three land sections so that disproportionate recharge occurs.

2. Project Tasks and Timeline

Identify what activities will be conducted by the project. For multiyear projects please list what activities are to be completed each year.

Table 1. E65 Canal lining project timeline.

Year	Begin	End	Tasks
2015	November	December	Feasibility Study, engineering, site inspection
2016	July	December	Project award and bid specifications
2017	January	September	Advertising, award of bid
	October	December	Construction, contract payments
2018	January	January	Final inspections, payments

3. Partnerships

Identify the roles and responsibilities of agencies and groups involved in the proposed project regardless of whether each is an additional funding source. List any other sources of funding that have been approached for project support and that have officially turned you down. Attach the rejection letter.

The State of Nebraska, through the Water Sustainability Fund, and Central will provide funding for constructing the Project, 60% and 40% of the total cost respectively and Central will provide OM&R funding for the long term. Central funding is provided in part by agricultural producers that receive the irrigation delivery service and support this effort toward basin sustainability. They have had to navigate water allocations and short seasons in 2005-2009 and

allocations again 2013-2015. No outside agencies have been approached for monetary support and none have rejected support for the Project. Stakeholders in this project will be those involved with the Basin-Wide Plan for Joint Integrated Water Resources Management of Overappropriated Portions of the Platte River Basin, Nebraska: The State of Nebraska, Platte River Recovery Implementation Program and the North Platte, South Platte, Twin Platte, Central Platte and Tri-Basin NRDs.

4. Other Sources of Funding

Identify the costs of the entire project, what costs each other source of funding will be applied to, and whether each of these other sources of funding is confirmed. If not, please identify those entities and list the date when confirmation is expected. Explain how you will implement the project if these sources are not obtained.

Total costs of the project are estimated at $2,724,800. This includes engineering, bid letting, materials, installation and a contingency. There will be two sources of funding for construction of this project; the Water Sustainability Fund at 60% and Central at 40%, i.e., the grant request from the WSF is $1,634,880 and Central's share is $1,089,920. Central's share is confirmed by a vote of the Board of Directors at a Special Meeting of the Board on December 28th, 2015. If the Project is approved by NRC, Central's share of the cost will be put into a restricted fund and a full accounting of that fund will be provided to NRC and/or NDNR at any time.

5. Support/Opposition

Discuss both support and opposition to the project, including the group or interest each represents.

Central believes the stakeholders of the Basin-Wide Plan as listed in #3 above will support this Project. All need water projects that will return the Platte River to a fully appropriated status. Groundwater users in the near vicinity of the Project canal fear the loss of recharge to wells. Groundwater contour flow lines in the Project area and hydrographs from similar areas that have been membrane-lined do not back his concerns. Central will continue to monitor groundwater levels.