CENTRAL PLATTE NATURAL RESOURCES DISTRICT FLOWMETER, TELEMETRY AND DATA MANAGEMENT SYSTEM

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Application Date: The date of this application is February 22, 2024
Applicant: Central Platte Natural Resources District (CPNRD)
Grand Island, Hall County, Nebraska
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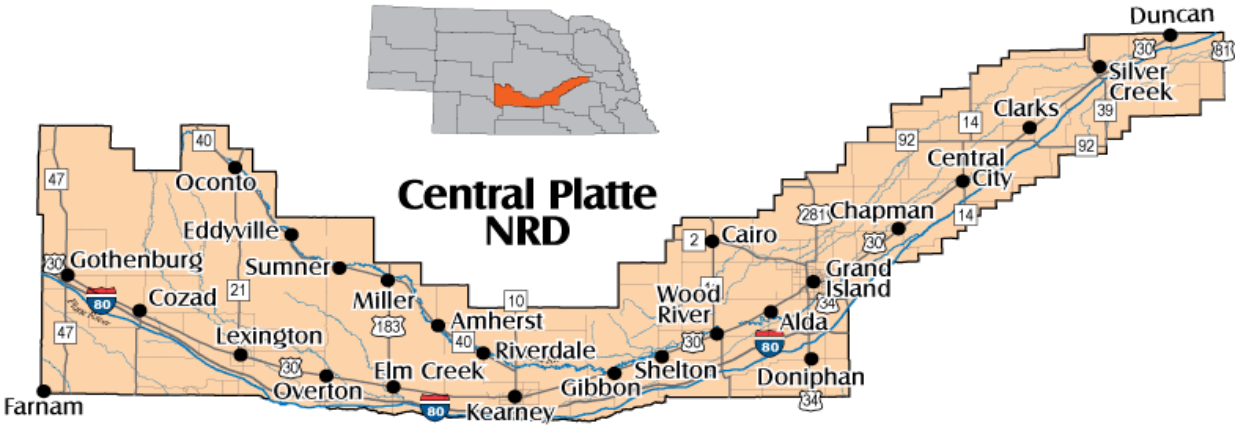
Requested Reclamation Funding: $291,126, Total Project Funding: $582,252.

The CPNRD in partnership with the Nebraska Department of Natural Resources (NeDNR), is proposing to install the CPNRD Flowmeter, Telemetry and Data Management System. This system will use telemetry-enabled irrigation flow meters to autonomously measure, report, and analyze daily groundwater pumping data in 100 groundwater wells strategically distributed across CPNRD. This will be Phase 2 of the project. Phase 1 began in 2013. The data will be transmitted to a cloud-based server that can be accessed remotely through the data portal dashboard. The flow meters will be deployed within the over appropriated areas and areas of groundwater declines in the CPNRD. The system will have the ability to collect daily flow data to aid in water management and water use by crop type for the purpose of drought resiliency. The irrigation flow data will be used by the Platte River Cooperative Hydrology Study (COHYST), an innovative, coupled groundwater/surface water numerical model. The COHYST model will analyze groundwater and surface water interaction and the effects of groundwater pumping and producer water use. This will enhance the ability of engineers, scientists, and decision makers to model and predict “what-if” scenarios and water use by crop type, thereby being proactive in drought resiliency management actions across central and western Nebraska. As a water district and local authority, CPNRD is a WaterSMART Category A applicant.

Project Location

The CPNRD is located in central Nebraska. Coordinates for the CPNRD office in Grand Island are latitude 40.920685° and longitude -98.384864°. The NRD encompasses the Platte River and tributaries within its reach. The boundaries extend from the western edge at the Lincoln-Dawson County line near Gothenburg to the eastern edge at the US Highway 81 near Columbus (see figure 1). CPNRD encompasses all or parts of 11 counties including: Dawson, Custer, Buffalo, Hall, Howard, Nance, Merrick, Hamilton, Platte, Polk, and Frontier counties. The largest city in the CPNRD is Grand Island located in Hall County and the second largest city is Kearney located in Buffalo County. The 2020 census municipal population is 144,855. The land area is 2,136,304 acres. In CPNRD, there are 1,029,230 irrigated acres or over 48% of the total land mass. The river system includes 205 miles of the Platte River, 50 miles of the North Channel, and 173 miles of the Wood River. The entire District is within the Nebraska 3rd Congressional District.

The CPNRD is part of the Great Plains. The NRD extends from the sub-humid zone in the eastern area to the semi-arid zone in the western area. The sub-humid zone is characterized by high humidity and cloud cover. The sub-humid zone average annual precipitation is approximately 28 to 30 inches. The semi-arid zone is characterized by lower humidity. The semi-arid zone average annual precipitation ranges from 10 to 20 inches per year. In the semi-arid region drought can be severe enough to impact vegetation for multiple years. (*National Drought Mitigation Center, 2023)*



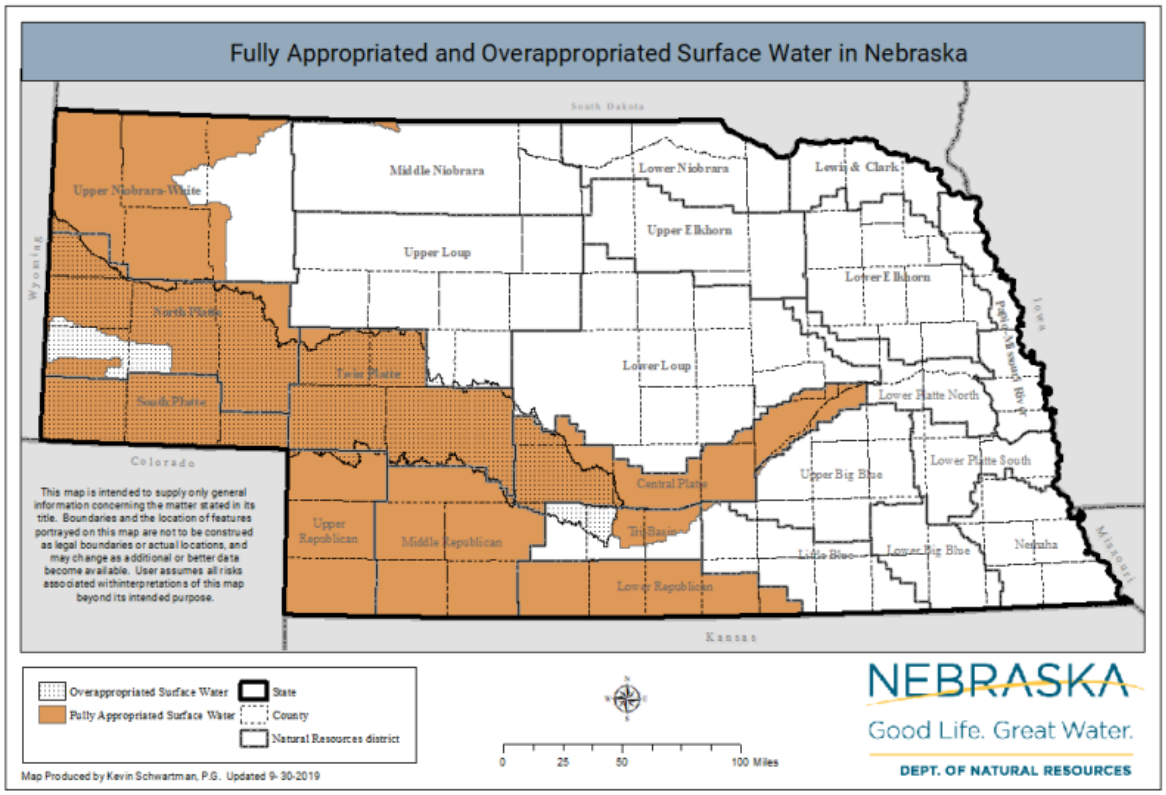
CPNRD MAP

Project Description

Background. Nebraska's Natural Resources Districts (NRDs) have been protecting lives, protecting property, and protecting the future since 1972. NRDs are unique to Nebraska. CPNRD is one of 23 NRDs created by the Nebraska Legislature. The mission of the CPNRD is

to wisely conserve, manage, and enhance the water, soil, range, wildlife, and forest resources within the CPNRD for the benefit of all.

Water management in Nebraska is accomplished through the combined efforts of the NeDNR and the NRDs. NRDs manage groundwater, whereas surface water is managed by the NeDNR. In areas where groundwater and surface water are hydrologically connected, NRDs have the authority through Neb. Rev. Stat. § 46-715(1)(b) to jointly develop an Integrated Management Plan (IMP) with NeDNR. IMPs are plans that allow the NRDs, NeDNR, and stakeholders to jointly address areas of water shortage. Agriculture production is a primary economic driver in CPNRD, and irrigation plays a critical role. Due to heavy development, areas of declines to groundwater and surface water resources have occurred. To help address the declines, river basins throughout the state have been evaluated and identified as fully- or over-appropriated when applicable. When a river basin, subbasin, or reach is designated as fully appropriated, the NeDNR places an immediate stay on the issuance of any new natural-flow, storage, or storage-use appropriations. The CPNRD contains both fully appropriated and over-appropriated basins.



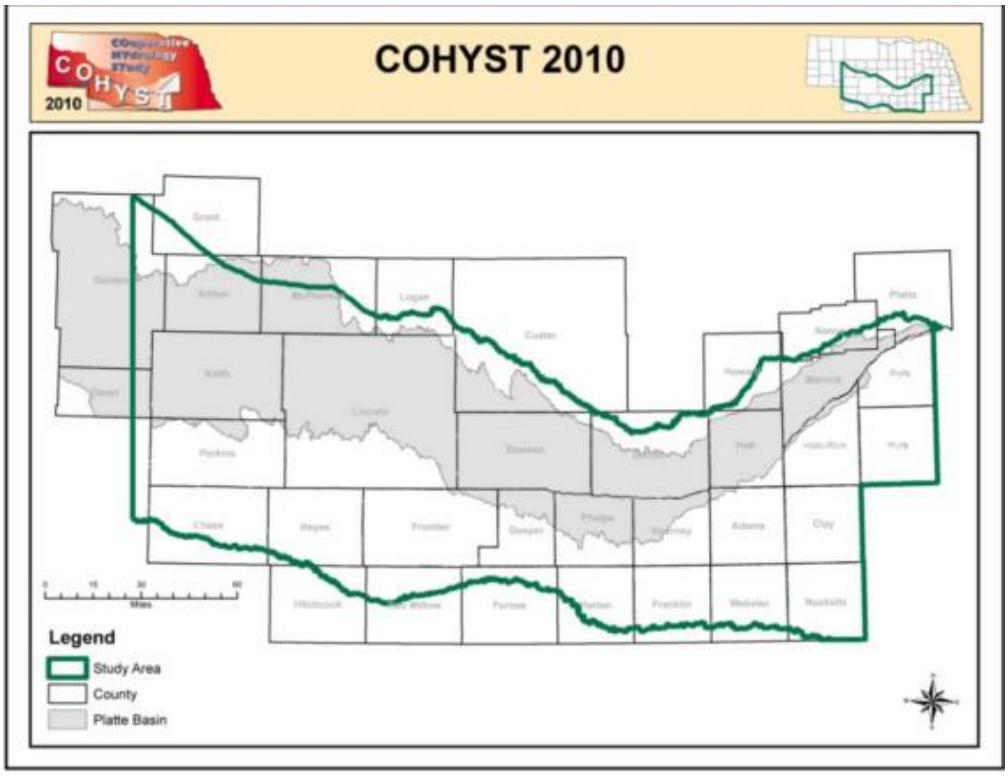
Map of Fully and Over-Appropriated Surface Water in Nebraska

COHYST Surface-Water/Groundwater Model. The Platte River Cooperative Hydrology Study (COHYST) is an innovative surface water/groundwater model designed to improve the understanding of hydrologic and geologic conditions and to understand the impact of water uses and management practices on long-term water supplies. The model extends from

Chapman, Nebraska, to the upstream end of Lake McConaughy, Nebraska. The original COHYST groundwater model was developed in 1998 as part of the Nebraska, Wyoming, Colorado, and the U.S. Department of the Interior Cooperative Agreement partnership to address endangered species affecting the Platte River Basin. The COHYST model has since been modified to include surface water operations, groundwater flow, and soil-water balance models. COHYST is used by the NeDNR, NRDs and other organizations to meet objectives of IMPs and the Platte River Recovery Implementation Program (PRRIP).

To gain a better understanding of the complex Platte River hydrologic system, the COHYST model is a linked or integrated surface-groundwater model. This is necessary to capture the full range of water uses and impacts to the entire water budget in the Platte River Basin, and to simulate and evaluate management scenarios. A third model, a watershed model accounts for land use, climate, and soil effects on the water budget. The specific components of the integrated COHYST model are the watershed model created by using outputs from the CROPSIM; the STELLA surface water model; and a groundwater model completed by using MODFLOW. The integrated model is a representation of the entire water balance of the Central Platte River system, and it can scale down to show how the conversion of surface water irrigated acres to groundwater irrigated acres impacts drought conditions, streamflow, local recharge, and impacts to groundwater levels.

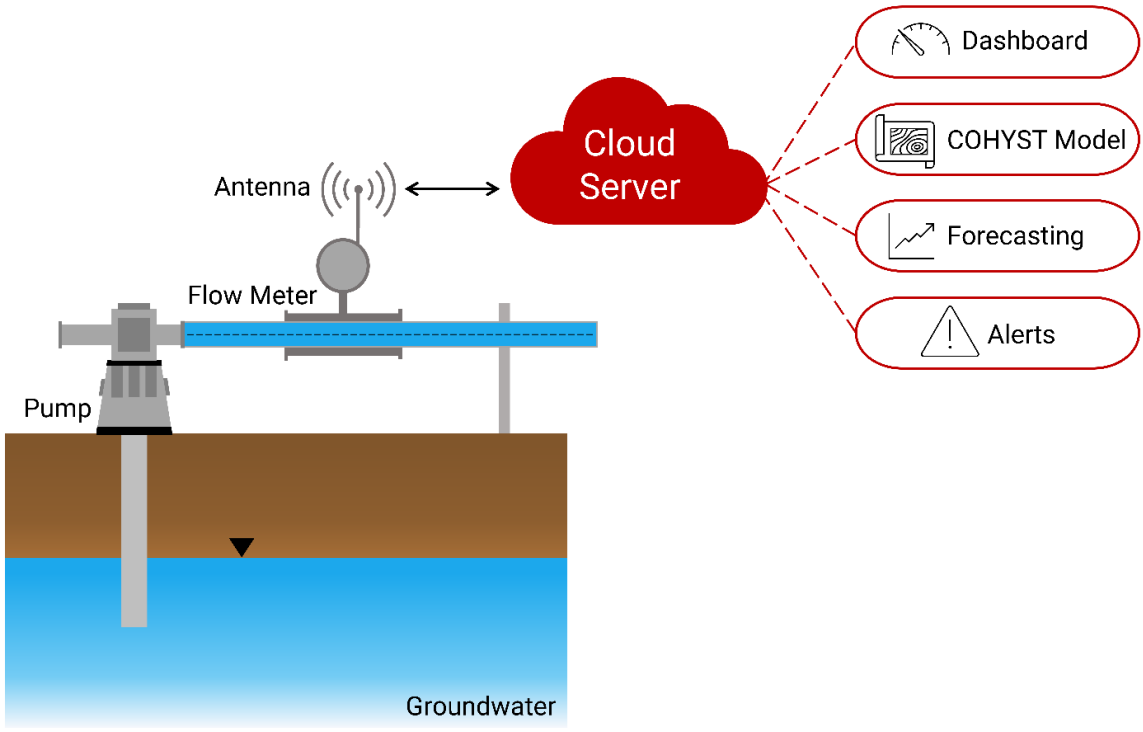
The CPNRD has a need for additional groundwater pumping data that can provide critical data to COHYST, particularly the CROPSIM and Watershed components of the model, of actual producer behaviors and groundwater pumping within the CPNRD. The CPNRD Flowmeter, Telemetry, and Data Management System project will provide accurate pumping and water use data for COHYST.



Map of COHYST Model Domain

The CPNRD Flowmeter, Telemetry, and Data Management System will be deployed in 100 wells concentrated within the over-appropriated and groundwater decline areas. The program will collect annual crop types, as well as groundwater pumping data. The data will be provided daily to the COHYST model. As flow data is collected, it will be inputted into the model, thereby allowing simulations of drought management actions and water use. In addition to providing actual pumping and water use data, there is an educational component. Several studies have shown that the presence and use of flowmeters impacts producer behaviors, such that groundwater pumping is less on wells with flowmeters (Irmak, Et al, 2022)

Technical Description. The CPNRD is proposing to install 100 telemetry enabled irrigation flowmeters coupled with a data management system on center pivots across the district. This project will be the second phase of the CPNRD Flowmeter, Telemetry and Data Management System. Phase 1 was constructed in 2013 and is still currently operating. Participation in the program by agriculture producers will be voluntary. The deployment area will focus on areas of over-appropriated water resources and groundwater declines. This system will use telemetry-equipped flowmeters to autonomously measure, report, and analyze daily groundwater pumping data. Data will be transmitted through the cloud and accessed through the data portal dashboard or to the COHYST model. The network will provide data to allow resource managers, engineers, and scientists to make real-time water management decisions, forecast scenarios and to provide alerts.



Conceptual Diagram of the CPNRD Flowmeter and Telemetry System and Data Management System

The irrigation flowmeter for use in this system will be a flowmeter model based on the standard propeller flowmeter. However, an electromagnetic meter will be considered. All units will have telemetry capabilities. The built-in telemetry units into flowmeters will be preferred, thereby reducing the need for additional equipment and costs. However, separate telemetry and flowmeter units will be evaluated based on price and application. The flowmeter and telemetry units will be solar- or battery-powered. Selection of the power system will be based on cost and functionality. The daily totalized or instantaneous data will be transmitted to a cloud-based server that can be accessed remotely or at the CPNRD headquarters. The data management system will provide information for multiple uses including real-time dashboards, reports, forecasting, and alerts. It will also have mobile applications. Additionally, the flow data will be used by COHYST. The COHYST model will analyze groundwater and surface water interaction and the effects of groundwater pumping and producer water use. This will enhance the ability to model and predict “what-if” scenarios and water use by crop type thereby being proactive in drought resiliency management actions across central and western Nebraska. Measurement of irrigation performance will occur by collecting water use over a 10-year period. Finally, the flow meter

data will be used for producer education on water use by providing valuable information on water consumption correlated to crop type, thereby optimizing use.

Evaluation Criteria

Evaluation Criterion A – Quantifiable Water Savings

1) *Describe the amount of estimated water savings.*

The CPNRD Flowmeter, Telemetry and Data Management System Phase 2 project estimates that approximately **1,162 acre-feet** of center pivot irrigation water will be conserved per year. The water savings will be a result of applying irrigation flowmeters to groundwater wells and using telemetry to transmit the data to producers, water resources managers, producers, engineers, and scientists. The digitally transmitted data will be accessed through the data portal dashboard and will be used for water use awareness and alerts. Also, the data will be used by the innovative coupled groundwater/surface water numerical COHYST model. The COHYST model will analyze daily groundwater and surface water interaction and the effects of groundwater pumping and producer water use.

Flowmeters are proven irrigation water measurement tools used to determine water use. This was demonstrated in Phase 1 of this project, which began in 2013 and is still operational. By using telemetry-capable flowmeters to autonomously measure, report, and analyze daily groundwater pumping data, precise data will be collected to provide decision makers and producers the information they need to make real-time water management decisions. Crop type will be another important part of data collected. By knowing the crop type and irrigation consumption, correlations can be made to develop the best management practices for water use. Educating producers on efficient irrigation water use is a key component of this project. Awareness of irrigation consumption improves water savings, as demonstrated in Phase 1 of the project, where on-field water use declined. Measured water use data collected in the previous phase shows water conservation by using flowmeters and telemetry connected to a data management system. On average irrigation water applied by the center pivots declined by seven inches per acre over a seven-year period.

2) *Describe the current losses. Please explain where the water that will be conserved is currently going and how it is being used. Consider the following:*

- *Explain where the current losses are going (e.g. back to the stream, spilled at the end of the ditch, seeping into the ground)?*

Image of a McCrometer Flow Meter used in Phase 1

Overapplied irrigation water is lost due to seepage, runoff, and evaporation. As excess water is applied on the ground, seepage will occur in the form of deep percolation. Overwatering wastes water and can be harmful to crop production. It transports extra fertilizers and pesticides into the ground that can ultimately impair the groundwater. Runoff can occur at the ground surface, and it can transmit fertilizers and pesticides to open channels, ditches, and streams. Evaporation removes excess water from the ground surface, thereby consuming irrigation water. Together, all these physical functions related to overapplication wastewater.

Groundwater that is conserved will remain in the local aquifer to maintain groundwater levels for future irrigation events, as well as improve discharge for baseflow in the Platte River. CPNRD estimates that approximately 1,162 AF/yr. will be saved throughout the project area through improved irrigation management practices.

- *If known, please explain how the current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?*

Current losses are being used in several ways by the natural and anthropogenic systems. The crops uptake the irrigation water. However, the overapplication transmits excess water to percolate beyond the root zone. The excess water can eventually recharge the groundwater. However, it is possible that the water will transmit excess nutrients, such as fertilizers and pesticides, to contaminate the groundwater. This is an important concern in the CPNRD, as high nitrate levels in the groundwater pollute the only source of drinking water. This has required the CPNRD

to establish groundwater management areas. These areas regulate the application and use of the contaminants and apply restrictions to the producers. Runoff can cause soil erosion, as well as transport fertilizers and pesticides to open channels, ditches, and streams. The runoff can be harmful to humans, fish, and wildlife. Evaporation transmits excess irrigation water to the atmosphere, which is lost for beneficial use.

- *Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?*

  Known benefits associated with the current losses include groundwater recharge, water for habitat, and streamflow augmentation. The excess water can recharge source water for drinking water, provide benefit to fish and wildlife, and recharge streams through conjunctive use. However, the caveat is if the seepage and runoff contain excess fertilizers and pesticides.

3) *Describe the support/documentation of estimated water savings.*

The projected water savings are based on actual field measurements during Phase 1. The CPNRD Flowmeter, Telemetry and Data Management System estimates that approximately **1,162 acre-feet** of center pivot irrigation water will be conserved per year. The water savings will be a result of applying irrigation flowmeters to groundwater wells and using telemetry to transmit the information to the data portal dashboard for use by producers, water resources managers, producers, engineers, and scientists.

Hydrographs were created for Phase 1 sites that show water use. The hydrographs show pumping data as applied irrigation, rainfall, and their sum for the total water applied to the surface. The result is inches of water applied per acre. The duration of the measured data is seven years. The average reduction in irrigation water applied per acre is seven inches over the seven-year period of record. The calculation of the projected water savings follows.

Known parameters.

100 pivots
Coverage area per pivot = 140 acres
Total area = 14,000 acres
Average water savings = 7 inches over 7 years
Average water savings per year = 1 inch
1 inch = 0.083 ft

Calculated parameters

Water savings per year = avg water savings per year (feet per year) x total area (acre)

Water savings per year = 0.083 ft x 14,000 = 1,162 acre-feet per year

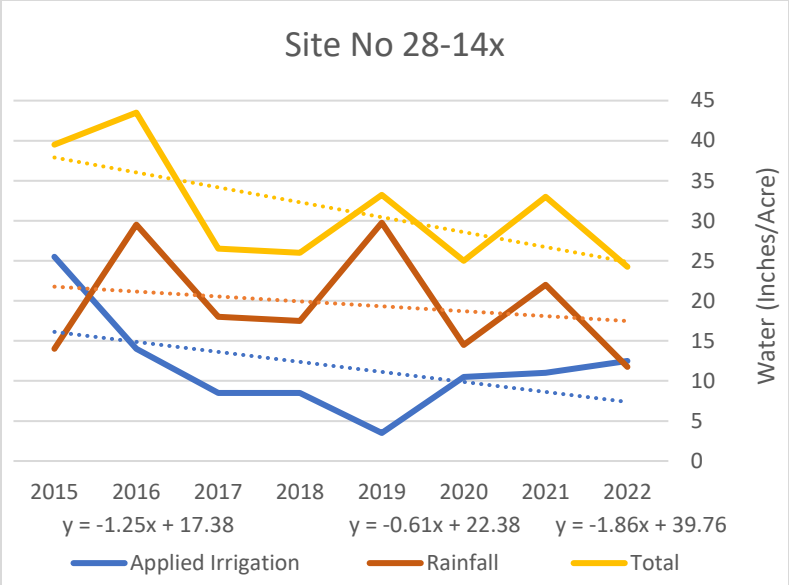
4) *Please address the following questions according to the type of infrastructure improvement you are proposing for funding.*

(3) *Irrigation Flow Measurement: Irrigation flow measurement improvements can provide water savings when improved measurement accuracy results in reduced spills and over-deliveries to irrigators.*

a. *How have average annual water savings been determined? Please provide all relevant calculations, assumptions, and supporting data.*

The projected water savings is based on actual field measurements during Phase 1. The CPNRD Flowmeter, Telemetry and Data Management System Phase 2 project estimates that approximately **1,162 acre-feet** of center pivot irrigation water will be conserved per year. The water savings will be a result of applying irrigation flowmeters to groundwater wells and using telemetry to transmit the information to the data portal dashboard for use by producers, water resources managers, producers, engineers, and scientists.

Hydrographs were created for Phase 1 sites that show water use. The hydrographs show pumping data as applied irrigation, rainfall, and their sum for the total water applied to the surface. The result is inches of water applied per acre. The duration of the measured data is 7 years. The average reduction in irrigation water applied per acre is 7-inches over the 7-year period of record.



Hydrograph of Water Use During Phase 1 at Site 28-14x

The calculation of the projected water savings is:
Known parameters.
100 pivots
Coverage area per pivot = 140 acres
Total area = 14,000 acres
Average water savings = 7 inches over 7 years
Average water savings per year = 1 inch
1 inch = 0.083 ft

Calculated parameters
Water savings per year = avg water savings per year (feet per year) x total area (acre)
Water savings per year = 0.083 ft x 14,000 = 1,162 acre-feet per year

b. Have current operational losses been determined? If water savings are based on a reduction of spills, please provide support for the amount of water currently being lost to spills.

Yes, current operational losses during Phase 1 have been determined. Flowmeters deployed show that one inch or 0.083 ft-acre per year of irrigation water is lost. The loss is due to overwatering, which causes excess seepage, runoff, and evaporation.

c. *Are flows currently measured at proposal sites and if so, what is the accuracy of the existing devices? How has existing measurement accuracy been established?*

Yes, the predominant meter used for irrigation water measurement in the CPNRD is the McCrometer propeller meter. The McCrometer propeller meter is manufactured and individually tested to be +/- 2 % accurate when properly installed. This accuracy is determined by factory gravimetric testing ensured by NIST (National Institute of Standards and Testing) traceability. Improved measurement will improve not only management, but also the quality and accuracy of data, reported to the CPNRD, IMP reporting, and for the Platte River Recovery Implementation Program (PRRIP), a basin-wide water management program that reaches across state boundaries.

d. *Provide detailed descriptions of all proposed flow measurement devices including accuracy and basis for the accuracy.*

The McCrometer MO300 Bolt-on saddle propeller meter or equivalent will continue to be used at each groundwater metering site. The meter will achieve +/- 2% accuracy. Additionally, all meters will be installed to meet or exceed manufacturer's specifications with the FS100 Flow Straightener, a flow conditioning device manufactured by McCrometer that corrects disturbances created by backflow protection or chemigation valves, pumps, elbows, or other disturbers. NIST traceability will continue to be the basis for this accuracy. In addition, each meter will be upgraded with FlowConnectTM telemetry or equivalent, with digital registers capable of ExactReadTM technology. ExactReadTM technology ensures 100% data transmission accuracy between the meter in the field and the website.

e. *Will annual farm delivery volumes be reduced by more efficient and timely deliveries? If so, how has this reduction been estimated?*

Yes, the annual farm delivery volumes will be reduced once Phase 2, the CPNRD Flowmeter, Telemetry and Data Management System is implemented. This was demonstrated in Phase 1 because the irrigation water usage dropped an average of seven inches per acre over seven years.

f. *How will actual water savings be verified upon completion of the project?*

The irrigation system performance will be determined by measuring data with the flowmeter at the center pivot. Then, the information will be transmitted by telemetry to the data portal dashboard. Flow readings can be collected instantaneously, daily, or seasonally depending on the needs of the user. Rainfall will be measured at each site. Yearly analysis of reduction of water-use in inches

applied will be a key performance measure. This was the same protocol used in Phase 1. Additionally crop type will be documented and correlated to water use.

Evaluation Criterion B – Renewable Energy

The CPNRD Flowmeter, Telemetry, and Data Management System project will increase energy efficiency in water management. Since this project addresses increased irrigation efficiency through irrigation management by the installation of permanently installed totalizing flowmeters with telemetry, Subcriterion B.2 will be completed and address the savings in power consumption in the CPNRD because of this project.

Subcriterion No. B.2 Increasing Energy Efficiency in Water Management

Describe and energy efficiencies that are expected to result from implementation of the water conservation or water efficiency project (e.g., reduced pumping).

- *If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.*

  The CPNRD Flowmeter, Telemetry and Data Management System will have quantifiable energy savings. The savings will be from reduced pumping costs because less irrigation water is applied to the ground surface.

  In Phase 1, a representative value for irrigation well power consumption of **769.41 kWh/AF** was obtained from CPNRD records where power coefficients were used in lieu of meter readings due to a meter failure. This will be used as a representative value for electrical consumption for irrigation pumping in the project area for the following calculations. The projected groundwater savings derived from improved irrigation water management and reporting is estimated to be **1,162 AF/yr.** from this project. This would equate to **894,054.42 kWh/yr.** in power savings as demonstrated in the following equations:

  (769.41 kWh/AF) (1,162 AF/yr) = **894,054.42 kWh/yr.** = **Estimated Power Savings from Water Conservation.**

- *How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.*

  The project energy efficiency improvements will reduce greenhouse gas emissions, thereby combating climate change. Diesel is the primary source of fuel for operation of center pivots. By reducing fuel consumption because of less pumping, greenhouse gas emissions will also be reduced.

  Since much of the electricity used in the project area is still generated by fossil fuels, any reduction in electrical consumption will reduce greenhouse gas emissions. In this case, a 1,162 AF reduction in irrigation pumping will have a significant effect on

electrical savings (nearly one million kWh/yr.) reducing the reliance on fossil fuels used to generate electricity in the region. With less reliance on fossil fuels for generation of electricity, a greater portion of the electricity used will come from renewable sources such as solar, wind, and hydropower.

- *If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?*

  As demonstrated in Phase 1, Phase 2 of this project will result in less pumping. Most irrigation wells in CPNRD are vertical turbine pumps powered by 70 horsepower electric (or similar) motors. CPNRD records showed electrical usage was approximately **769.41 kWh/AF** of irrigation water produced. Water savings through enhanced irrigation water management is expected to reduce groundwater pumping by **1,162 AF** annually in CPNRD which will have a commensurate reduction on energy usage in the district. This reduction in pumping is estimated to result in energy savings of **894,054.42 kWh/yr.**

- *Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.*

  The energy savings estimate originates from the center pivot well. All energy savings calculations are based on the use of power at the point of diversion, which is the irrigation well that extracts groundwater from the aquifer. No alternate site of diversion will be implemented in this project.

- *Does the calculation include any energy required to treat the water, if applicable?*

  No water will be treated, and therefore, no energy is required.

- *Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.*

  Yes, the project will result in reduced vehicle miles driven. This is because the telemetry system will improve the operations of the producers, requiring less drive or travel time to visit the site.

  Without flowmeters and telemetry CPNRD would be required to have employees regularly read and perform maintenance on irrigation flowmeters installed in the CPNRD, driving up to **3,600 miles/year** in a three-month period. The CPNRD estimates that upon the conclusion of this project, the miles driven will be reduced by at least **80%** to **720 miles per year.** That would result in about 2,880 fewer miles driven in a year. At approximately 12 miles per gallon, fuel savings would be over 240 gallons/year.

Achieving the goals of this project would not be possible without the deployment of real-time telemetry. Approval of this proposal will prevent thousands of miles driven and in turn, the reduction of greenhouse gases produced.

- *Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).*

  The project will use either solar panels or batteries to operate the telemetry system this will result in minimal use of commercial energy savings. The decision on power source will be made during procurement of the flowmeters and telemetry equipment. Depending on the cost and application, small-scale solar panels may be used to power the telemetry and flowmeter systems.

  The FlowConnect™ telemetry units have a solar-powered option used for frequent readings. These units utilize cellular telemetry communications and are powered by a 540-mA solar panel, eliminating the need for commercial power. Since each system will be a cellular node, the communications system will be independent of a capital-intensive system of towers that would be necessary for a traditional radio telemetry system.

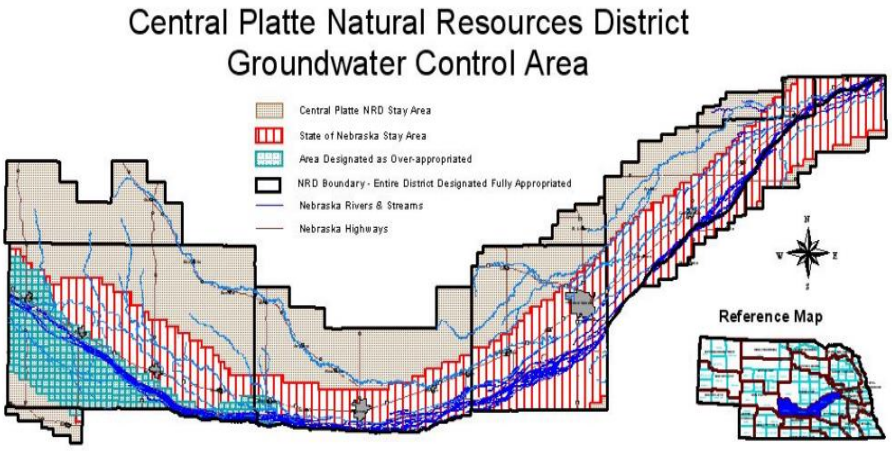
Evaluation Criterion C – Sustainability Benefits

Resilience and Sustainability Benefits. *Will the project address a specific water and/or energy sustainability concern? Please address the following:*

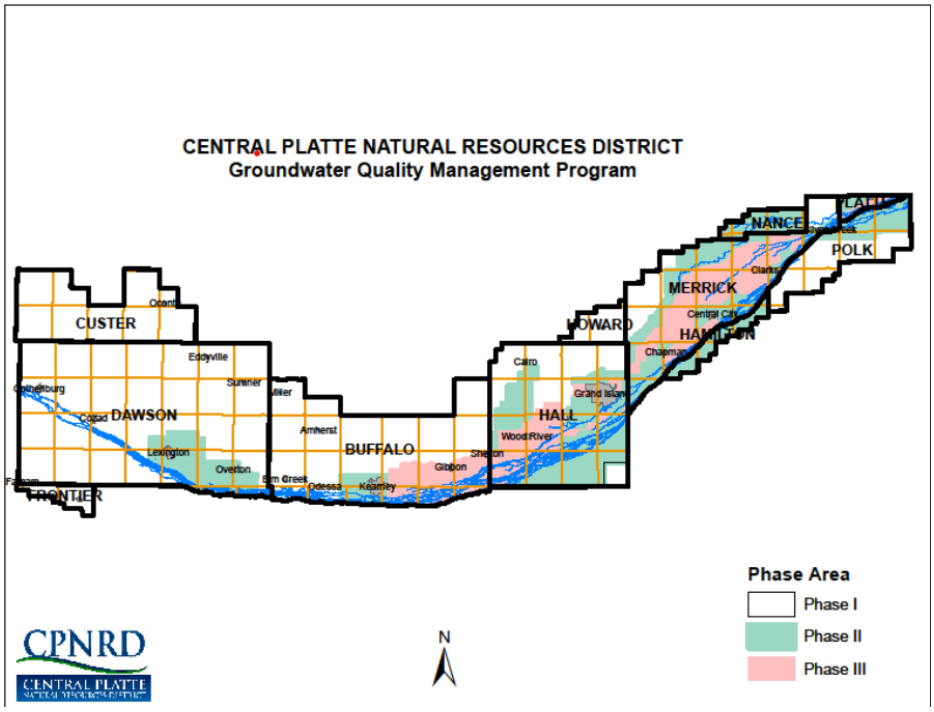
- *Explain and provide detail of the specific issue(s) in the area that is impacting water resilience and sustainability. Consider the following:*
  - *Describe recent, existing, or potential drought or water scarcity conditions in the project area.*

    Water use and management of groundwater, surface water, and water quality are specific issues of concern in CPNRD. In some sections of the CPNRD, water levels are declining both in groundwater and streamflow. Throughout CPNRD, drought has impacted water resources. These shortages are due to the high rate of overuse of groundwater, which impacts hydrologically connected surface water. To address groundwater declines, the CPNRD directors established the Groundwater Management Plan (GWMP), with a phased program to implement such controls when they are needed. The maximum acceptable decline ranges from 10 feet in the eastern end of the district to 30 feet in portions of the western end of the district. If the water table falls to 50% of that maximum decline, GWMP Phase II would go into effect for any area or areas affected, triggering mandatory reductions in irrigated acres and establishing spacing limits for new irrigation wells. The groundwater control areas regulate existing irrigation wells and restrict installation of new wells. In the areas of over-appropriation, water use restrictions apply to both surface water and

groundwater. The CPNRD Flowmeter, Telemetry, and Data Management System will focus installation in the areas of over-appropriation and groundwater declines.

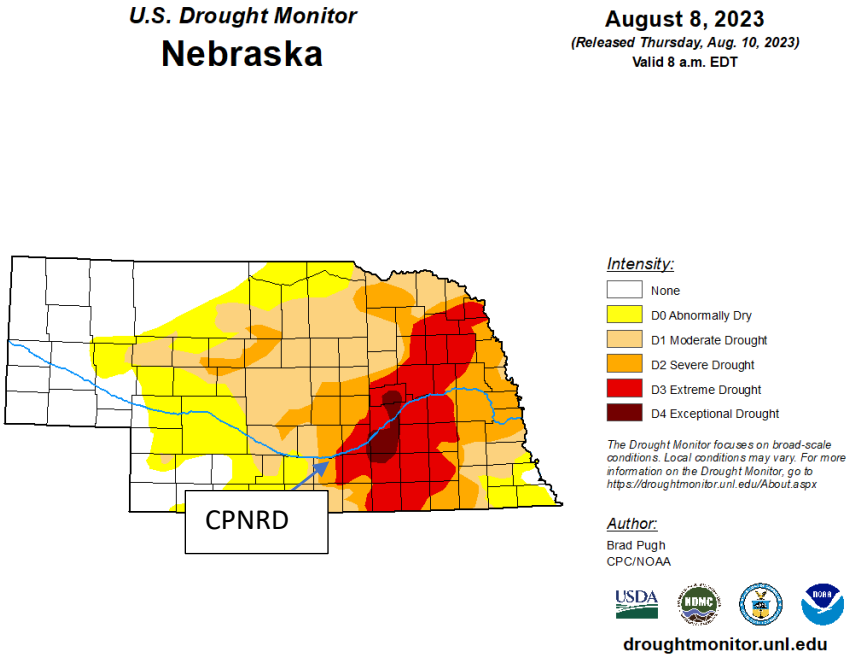


Concurrently, nitrates contaminate the aquifer. The groundwater contamination is a result of over application of fertilizer and excess pumping that causes the nitrate to seep into the groundwater. In areas of nitrate pollution drinking water needs additional treatment is needed to remediate the contaminated groundwater. The system will also monitor groundwater usage in these areas of contamination.



- *Is the project in an area that is experiencing, or recently experienced, drought or water scarcity?*

Yes, this area has been significantly impacted by drought for the past twenty years. Much of CPNRD is in the area designated as either moderate to severe drought by the Drought Monitor published by the National Drought Mitigation Center at the University of Nebraska-Lincoln.



Irrigated agriculture is the focus of this proposal, which will conserve water through improved irrigation efficiencies through the implementation of the CPNRD Groundwater Management Plan. Irrigation wells are powered by either electricity or internal combustion engines to extract groundwater from the local aquifer. Improving the irrigation efficiency of farms in CPNRD will reduce the volume of groundwater pumped and consequently the amount of energy consumed either in the form of electricity or fossil fuels which will have positive effects on energy sustainability in Nebraska. Improved groundwater management through irrigation efficiency will reduce the electricity demand in the Platte River Basin. Conserving groundwater as proposed in this application will improve the supply of power to this area of the State of Nebraska.

- *Describe any projected increases to the severity or duration of drought or water scarcity in the project area. Provide support for your response (e.g., reference a recent climate informed analysis, if available).*

As climate change continues it is expected that severity of drought and water scarcity will increase in the CPNRD. Drought has already had a negative impact in the area. As recently as December 2022, the USDA designated twelve Nebraska Counties as disasters due to drought. The twelve counties included a portion of the CPNRD and the majority of the remaining counties in CPNRD were eligible for assistance as contiguous counties to the primary counties.

- *Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.*

  When over pumping occurs the use of fossils fuels increases. This adds to greenhouse gas emissions causing pollution and wasting valuable resources and impacting energy sustainability. Without remote monitoring by telemetry of groundwater pumping more frequent trips to the fields were needed to verify pumping rates, again this adds to greenhouse gas emissions causing pollution and impacting energy sustainability The groundwater contamination is a result of over application of fertilizer and excess pumping that causes the nitrate to seep into the groundwater. In areas of nitrate pollution drinking water needs additional treatment is needed to remediate the contaminated groundwater. This results in higher energy use.

- *Please describe how the project will directly address the concern(s) stated above.*

  The project will help mitigate the impact of water shortages due to drought and climate change. This will be accomplished by reducing pumping since the CPNRD Flowmeter, Telemetry, and Data Management System will help producers use groundwater more efficiently. This was demonstrated in Phase 1 because the irrigation water usage dropped by an average of seven inches per acre over seven years. By using less groundwater pumping, costs will be reduced, and less fossil fuels will be needed. This will reduce the creation of greenhouse gases and thereby positively address climate change. Without remote monitoring by telemetry of groundwater pumping, more frequent trips to the fields were needed to verify pumping rates, again this adds to greenhouse gas emissions causing pollution and impacting energy sustainability. The groundwater contamination is a result of over application of fertilizer and excess pumping that causes the nitrate to seep into the groundwater. In areas of nitrate pollution drinking water needs additional treatment is needed to remediate the contaminated groundwater. All the above will have a positive effect on drought resiliency and climate change.

- *Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?*

  Yes, the project will directly result in more efficient management of the water supply. The water will remain in the aquifer for longer periods of time due to less pumping. This was demonstrated in Phase 1 because the irrigation water usage dropped by an average of seven inches per acre over seven years. With less pumping, the aquifer will benefit, and negative impacts to groundwater levels will be reduced. This will conserve water. The

data collected by improved water use will benefit and improve the COHYST innovative surface water/groundwater model. A greater understanding of the hydrologic and geologic conditions that impact water uses and management practices on the long-term water supplies is valuable information for water managers, engineers, scientists, and producers.

- *Please address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.*
    - *Indicate the quantity of conserved water that will be used for the intended purpose(s).*

      The projected water savings is based on actual field measurements during Phase 1. The CPNRD Flowmeter, Telemetry and Data Management System Phase 2 project estimates that approximately 1,162 acre-feet of center pivot irrigation water will be conserved per year.

    - *Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.*

      The water savings will be a result of applying irrigation flowmeters to groundwater wells and using telemetry to transmit the information to the data portal dashboard for use by producers, water resources managers, producers, engineers, and scientists.

- *Will the project assist States and water users in complying with interstate compacts?*

  The Platte River Recovery and Implementation Plan (PRRIP) is the recovery plan that includes portions of Nebraska, Colorado, and Wyoming and covers CPNRD. The PRRIP has three main elements:

  1. Increasing stream flows in the central Platte River during relevant time periods
  2. Enhancing, restoring, and protecting habitat lands for the target bird species
  3. Accommodating certain new water-related activities

  These elements are implemented according to underlying principles that require interests in land to be acquired only from willing participants and that they avoid increasing tax burdens to local citizens by paying taxes or their equivalent on PRRIP lands.

  The background and history of the PRRIP includes efforts to re-license Kingsley Dam on the North Platte River in western Nebraska, the presence of threatened and endangered species, and the U.S. Fish and Wildlife Service's 1994 Biological Opinion on Platte River operations. The States of Nebraska, Colorado, and Wyoming and the U.S. Department of Interior joined together in July 19997 to sign the "Cooperative Agreement for Platte River Research and Other Efforts Relating to Endangered Species Habitat along the Central Platte River, Nebraska".

  The CPNRD Flowmeter, Telemetry, and Data Management System will reduce groundwater consumption and thereby groundwater levels will increase. As a result,

streamflow will increase since groundwater and surface water are hydrologically connected. This will provide more flow to the Platte River helping the PRRIP achieve the programs objectives.

- *Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?*

  Yes, the project will help prevent water-related crisis or conflict. Due to heavy development, areas of declines to groundwater and surface water resources have occurred. To address the declines, river basins throughout the state have been evaluated and some areas have been identified as fully-appropriated or over-appropriated surface water status. When a river basin, subbasin, or reach is designated as fully appropriated the NeDNR places an immediate stay on the issuance of any new natural-flow, storage, or storage-use appropriations. The CPNRD contains both fully-appropriated and over-appropriated basins. Since groundwater is hydrologically connected to surface water in CPNRD, conflict occurs between the groundwater and surface water users and agencies responsible for the management of threatened and endangered species. By accurately measuring the groundwater use, the data will be available to scientifically answer what is the amount of consumption.

  The project will benefit the PRRIP as described in the previous question. The recovery plan that includes portions of Nebraska, Colorado, and Wyoming and covers CPNRD. The CPNRD Flowmeter, Telemetry, and Data Management System will reduce groundwater consumption and thereby groundwater levels will increase. As a result, streamflow will increase since groundwater and surface water are hydrologically connected. This will help provide more flow to the Platte River, helping the PRRIP achieve the programs objectives.

Ecological Benefits. *In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that that result in ecological benefits, through this section and other sections above, consistent with the SECURE Water Act. Please provide information regarding how the project will provide ecosystem benefits, including the following:*

- *Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).*

  Federally threatened or endangered species (or target species) in the CPNRD include the piping plover, whooping crane, interior least tern, and further downstream in the Platte River, the pallid sturgeon.

  Efficient use of irrigation water will reduce runoff, thereby protecting surface water and eventually the target species. Also, groundwater and surface water are hydrologically connected in many parts of the CPNRD. In those areas, over pumping decreases the

groundwater levels and results in less water available to recharge streamflow. Therefore, surface water levels decline. This can be harmful to enhancing, restoring, and protecting habitat lands for the targeted species.

The Platte River Recovery and Implementation Plan (PRRIP) is the recovery plan that covers CPNRD. The PRRIP has three main elements:

1. Increasing stream flows in the central Platte River during relevant time periods
2. Enhancing, restoring, and protecting habitat lands for the target bird species
3. Accommodating certain new water-related activities

These elements are implemented according to underlying principles that require interests in land to be acquired only from willing participants and avoid increasing tax burdens to local citizens by paying taxes or their equivalent on PRRIP lands.

The background and history of the PRRIP are tied to efforts to re-license Kingsley Dam on the North Platte River in western Nebraska, the presence of threatened and endangered species, and the U.S. Fish and Wildlife Service's 1994 Biological Opinion on Platte River operations. These events provided the backdrop for conflict over the Platte River's vital water. Rather than engaging in years of courtroom battles over limited water supplies and individual river species, the governors of the three basin states joined with the Secretary of Interior in July 1997 to sign the "Cooperative Agreement for Platte River Research and Other Efforts Relating to Endangered Species Habitat along the Central Platte River, Nebraska".

The CPNRD Flowmeter, Telemetry, and Data Management System will reduce groundwater consumption and thereby groundwater levels will increase. As a result, streamflow will increase since groundwater and surface water are hydrologically connected. This will provide more flow to the Platte River helping the PRRIP achieve the programs objectives.

- *Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels, recreational benefits, etc.).*

Yes, water will remain in the aquifer for longer periods of time due to less pumping. This was demonstrated in Phase 1 because the irrigation water usage dropped by an average of seven inches per acre over seven years. With less pumping, the aquifer will benefit, and negative impacts to groundwater levels will be reduced. This will conserve water. Water application rates will be based on crop type and climate conditions and conservation will be enhanced.

- *Will the proposed project reduce the likelihood of a species listing or otherwise improve the species status?*

Yes. The proposed project will conserve water in the Platte River Basin. It is documented by the Platte River Recovery and Implementation Program (PRRIP) and the COHYST study

the impact that hydrology has on threaten and endangered species. More efficient use of irrigation water will reduce consumption. Thereby, allowing more water to return to the Platte River and ultimately improving the species status.

- *Please describe any other ecosystem benefits as a direct result of the project.*

  With improved application rates, there will be a reduced chance of leaching fertilizers and pesticides past the root zone and eventually into the aquifer. Since groundwater is the source of drinking water in CPNRD, prevention of contamination will protect human health. By applying fertilizers and pesticides to the appropriate quantity, material costs will be reduced and more efficient distribution in the supply chain will occur. Additionally, with proper irrigation, the opportunity for harmful compounds in runoff will be minimized. This will protect surface water, fish and wildlife, and humans.

Note: Projects that are intended to improve streamflows or aquatic habit, and that are requesting $500,000 or more in Federal funding, must include information about plans to monitor the benefits of the project. Please describe the plan to monitor improved streamflows or aquatic habit benefits over a five-year period once the project has been completed. Provide detail on the steps to be taken to carry out the plan.

Not Applicable. The direct effect of this project is groundwater conservation through enhanced irrigation management. Improved flow in the Platte River may be an indirect effect of the project, but the goal of this project is groundwater conservation which will sustain groundwater levels that may have an indirect effect on flows in the Platte River.

Climate Change*: E.O. 14008 emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.*

- *Describe how the project addresses climate change and increases resiliency. For example, does the project help communities adapt to bolster drought resilience?*

  The project will help mitigate the impact of water shortages due to drought caused by climate change. This will be accomplished by reducing pumping since the CPNRD Flowmeter, Telemetry, and Data Management System will help producers use groundwater more efficiently. This was demonstrated in Phase 1 because the irrigation water usage dropped by an average of seven inches per acre over seven years. By using less groundwater, pumping costs will be reduced, and less fossil fuels will be needed. This will reduce the creation of greenhouse gases and thereby positively address climate change. Without remote monitoring by telemetry of groundwater pumping more frequent trips to the fields were needed to verify pumping rates. Again, this adds to greenhouse gas emissions, causing pollution and impacting energy sustainability. The groundwater contamination is a result of over application of fertilizer and excess pumping that causes the nitrate to seep into the groundwater. In areas of nitrate pollution, drinking water needs additional treatment to remediate the contaminated groundwater. Well-managed irrigation programs reduce the expense and energy used to treat drinking water,

reducing greenhouse gas emissions and helping sustain drinking water supplies. All the above will have a positive effect on drought resiliency and climate change.

- *Does the project seek to improve ecological resiliency to climate change?*

  Yes, this project seeks to improve ecological resiliency to climate change. Drought mitigation will occur because less irrigation water will be required for crop production. With less pumping, the negative impacts on groundwater levels will be reduced, and this will conserve water. Water application rates will be based on crop type and climate conditions. With improved application rates, there will be a reduced chance of leaching fertilizers and pesticides past the root zone and eventually into the aquifer. Since groundwater is the source of drinking water in CPNRD, prevention of contamination will protect human health. By applying fertilizers and pesticides to the appropriate quantity, material costs will be reduced and more efficient distribution in the supply chain will occur. Additionally, with proper irrigation, the opportunity for harmful compounds in runoff will be minimized. This will protect surface water, fish and wildlife, and humans.

- *Does the proposed project seek to reduce or mitigate climate pollutions such as air or water pollution?*

  Yes, water supply sustainability will be strengthened by reducing pumping of groundwater as demonstrated in Phase 1. As a result, more groundwater will be available in the aquifer and ultimately available to producers and residents during periods of normal precipitation and during times of drought. Without remote monitoring by telemetry of groundwater pumping more frequent trips to the fields were needed to verify pumping rates. Again, this adds to greenhouse gas emissions, causing pollution and impacting climate change. The groundwater contamination is a result of over application of fertilizer and excess pumping that causes the nitrate to seep into the groundwater. In areas of nitrate pollution, drinking water needs additional treatment to remediate the contaminated groundwater. Energy used to treat drinking water will also be reduced across the region. This will mitigate the impact of climate change.

- *Does the proposed project include green or sustainable infrastructure to improve community climate resilience?*

  Yes, the project will use either solar panels or batteries to operate the telemetry system, and this will result in some energy savings. The decision on power source will be made during procurement of the flowmeters and telemetry equipment. Depending on the cost and application, small-scale solar panels may be used to power the telemetry and flowmeter systems.

- *Does the proposed project contribute to climate change resiliency in other ways not described above?*

  Yes, the project will result in lower greenhouse gas emissions because pumping will be reduced, less vehicle miles will be needed to travel to the site, and water treatment energy costs for nitrate removal will be reduced. Since the energy source of the irrigation

pumps is either electricity or internal combustion engines, and most electricity is generated from fossil fuels, reduced pumping for irrigation will help lower greenhouse gases in the atmosphere.

Evaluation Criterion D – Disadvantaged Communities, Insular Areas, and Tribal Benefits

*Up to **15 points** may be awarded based on the extent that the project demonstrates support for the Biden-Harris Administration's priorities, including E.O. 14008: Tackling the Climate Crisis at Home and Abroad and the President's memorandum, Tribal Consultation and Strengthening Nation-to-Nation Relationships.*

Please address only those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the priority(ies) is well supported in the application.

Subcriterion D.1. Disadvantaged Communities

E.O. 14008 affirms the advancement of environmental justice for all through the development and funding of programs to invest in disadvantaged communities. This criterion, which is used to identify projects that advance the Justice 40 Initiative, includes all Federally recognized Tribes and Tribal entities, and any disadvantaged communities in insular areas (American Samoa, Guam, the Northern Mariana Islands, or the Virgin Islands) identified pursuant to the following criteria.

- *Please use the White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool (CEJST), available online at Explore the map Climate & Economic Justice Screening Tool (screeningtool.geoplatform.gov/ en/#17.59/36.63278/-105.181329) to identify any disadvantaged communities that will benefit from your project. The CEJST developed by the White House Council on Environmental Quality is a geospatial mapping tool that utilizes publicly available, nationally consistent data sets related to climate change, the environment, health, and economic opportunity to identify disadvantaged communities. In addition to identifying specific census tracts that are disadvantaged, the CEJST includes the lands of Federally recognized Tribes as disadvantaged communities. In addition, regardless of whether a Federally recognized Tribe has land, all Federally recognized Tribal entities are considered disadvantaged communities for the purposes of the Justice40 Initiative.*[2]

  Yes, several disadvantaged and underserved communities exist in the CPNRD, as noted in the following answers. The primary CPNRD areas are in portions of Grand Island, Lexington, and Kearney, Nebraska, and counties with a median income less than the median annual income of Nebraska are listed in the next question. Benefits to these communities will be groundwater sustainability water resources for all users and beneficial uses, including agriculture, municipal, industrial and domestic uses. Groundwater pumped for irrigation is

the largest use of water in the CPNRD, therefore improving the efficiency of the use of groundwater will be to the benefit of all water users in the district.

The following communities and associated census tracts are designated as Disadvantaged Communities by the Climate and Economic Justice Screening Tool and lie within CPNRD and consequently this project. This project will have a beneficial effect on the sustainability of water resources for these communities.

Project Area City, County	Census Tract
Lexington, Dawson County NE	31047968400
Lexington, Dawson County NE	31047968500
Kearney, Buffalo County NE	31019969500
Kearney, Buffalo County NE	31019969300
Grand Island, Hall County NE	31079000700
Grand Island, Hall County NE	31079000400
Grand Island, Hall County NE	31079000200
Grand Island, Hall County NE	31079001000
Grand Island, Hall County NE	31079000900
Grand Island, Hall County NE	31079001100

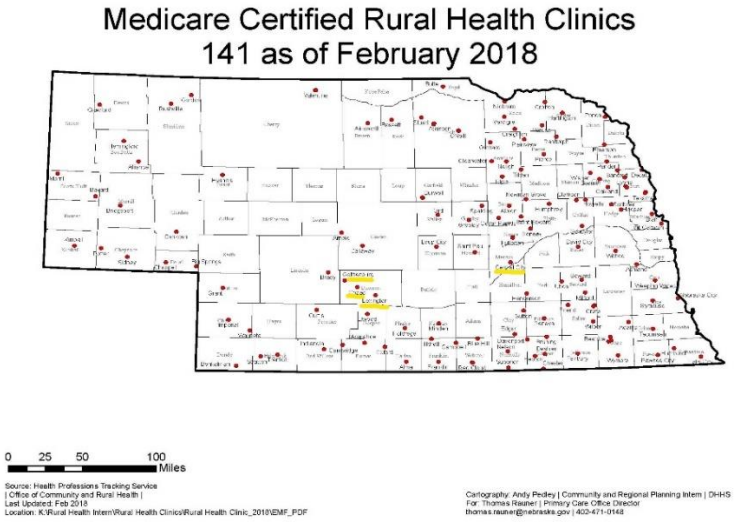
- *If applicable, describe how the proposed project will serve or benefit a disadvantaged community, identified using the tool. For example, will the project improve public health and safety by addressing water quality, add new water supplies, provide economic growth opportunities, or provide other benefits in a disadvantaged community?*

Yes. 2022 data from the U.S. Census Bureau reports that the annual median household income for the State of Nebraska is **$71,722**. The median annual income from the seven counties in the CPNRD is less than the statewide annual median household level as shown in the table below:

CPNRD Counties	2022 Median Household Income
Dawson County, Nebraska	$67,462
Buffalo County, Nebraska	$70,093
Hall County, Nebraska	$63,553
Howard County, Nebraska	$70,766
Merrick County, Nebraska	$57,873
Nance County, Nebraska	$60,054
Polk County, Nebraska	$67,695
State of Nebraska	$71,722

Consequently, the project area meets the criteria for a disadvantaged community as defined by Section 1015 of the Cooperative Watershed Act. (https://data.census.gov)

The State of Nebraska Department of Health and Human Services has designated medical facilities for underserved communities in the state. Medicare-certified rural health clinics are created to serve rural underserved areas with affordable and accessible primary health care services. **Four** communities in the CPNRD, including Gothenburg, Cozad, Lexington, and Central City, have received this designation as shown in the map below.



Subcriterion D.2. Tribal Benefits *The Department is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal trust responsibilities. The President's memorandum, Tribal Consultation and Strengthening Nation-to-Nation Relationships, asserts the importance of honoring the Federal Government's commitments to Tribal nations. Address the following, if applicable:*

- *Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?*

  No. The project does not directly serve and/or benefit a tribe.

- *Does the proposed project support Tribal led conservation and restoration priorities, and/or incorporate or benefit indigenous traditional knowledge and practices?*

  No.

- *Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, increased renewable energy, or economic growth opportunities? Does the proposed project support Reclamation's Tribal trust responsibilities or a Reclamation activity with a Tribe?*

  No. The project does not directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits.

Evaluation Criterion E – Complementing On-Farm Irrigation Improvements

If the proposed project will complement an on-farm improvement eligible for NRCS assistance, please address the following:

- *Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies.*
  - *Provide a detailed description of the on-farm efficiency improvements.*

    NRCS Environmental Quality Incentive Program (EQIP) Practices from the **449 Irrigation Water Management - Advanced Technologies** practice code will be deployed on irrigated farms in the project area by the NRCS. Specific practices that will be applied on irrigated land in the CPNRD project area will include; Variable Rate Irrigation (VRI), Soil Moisture Sensors, Rainfall Detection with Auto-stop for center-pivots, Integrated Evapotranspiration, and Variable Speed Pumping.

  - *Have the farmers requested technical or financial assistance from NRCS for the on-farm efficiency projects, or do they plan to in the future?*

    CPNRD staff will discuss with the NRCS Area Engineer, the local NRCS District Conservationist, and the NRCS State Irrigation Engineer to prioritize practices within the project area.

  - *If available, provide documentation that the on-farm projects are eligible for NRCS assistance, that such assistance has or will be requested, and the number or percentage of farms that plan to participate in available NRCS programs.*

    Practices including Variable Rate Irrigation (VRI), Soil Moisture Sensors, Rainfall Detection with Auto-stop for center-pivots, Integrated Evapotranspiration, and Variable Speed Pumping are available to farmers in the State of Nebraska through the USDA NRCS. Funding for these practices will be pursued through this agency for irrigators to further improve on-farm irrigation water application efficiency and therefore reduce the groundwater extraction in CPNRD to improve the probability of achieving water conservation goals set forth in the CPNRD IMP.

  - *Applicants should provide letters of intent from farmers/ranchers in the affected project areas.*

    Since the deployment irrigation sites have not yet been selected, letters of intent from farmers/ranchers have not been prepared.

- *Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement.*

- *Will the proposed WaterSMART project complement the on-farm project by maximizing efficiency in the area? If so, how?*

  Yes, the proposed WaterSMART project will complement the on-farm water conservation programs. The irrigation water management technologies will utilize the telemetry data output of the new flowmeters and then integrate the measurements for improved application efficiency of the irrigation system.

- *Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.*

The CPNRD will receive on-farm improvements during this project. NRCS Environmental Quality Incentive Program (EQIP) Practices from the 449 Irrigation Water Management - Advanced Technologies practice code will be deployed on irrigated farms in the project area by the NRCS. Specific practices that will be applied on irrigated land in the CPNRD project area will include Variable Rate Irrigation (VRI), Soil Moisture Sensors, Rainfall Detection with Auto-stop for center-pivots, Integrated Evapotranspiration, and Variable Speed Pumping. Groundwater savings will be realized with these features that will improve seasonal and application efficiency and reduce irrigation water losses on the farm to non-beneficial uses.

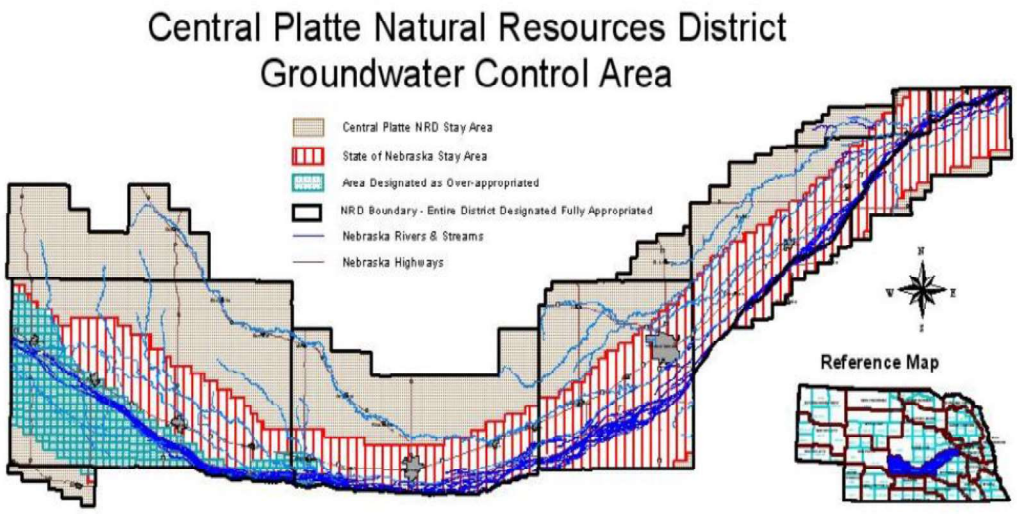
- *Estimate the potential on-farm water savings that could result in acre-feet per year. Include support or backup documentation for any calculations or assumptions.*

  The CPNRD estimates that additional water savings can be achieved by implementing the on-farm water savings technologies and advanced irrigation methods. Previously, water savings of 1.0 inch per acre per year were measured during Phase 1 of the project in which 100 telemetry enabled flowmeters were deployed. This represents 25% in additional water savings. For Phase 2 the estimated area water savings is 1,162 acre-feet per year, and the area is 14,000 acres.

  (14,000 acres) (25%) (1 acres-inches/acres) = 3,500 acre-inches or 292 acre-feet of additional water savings due to telemetry-based flowmeters applied for advanced irrigation methods.

- *Please provide a map of your water service area boundaries. If your project is selected for funding under this funding opportunity, this information will help NRCS identify the irrigated lands that may be approved for NRCS funding and technical assistance to*

complement funded WaterSMART projects.



Evaluation Criterion F – Readiness to Proceed

- *Identify and provide a summary description of the major tasks necessary to complete the project.* ***Note: Do not repeat the more detailed technical project description provided in Section D.2.2.2 Application Content. This section should focus on a summary of the major tasks to be accomplished as part of the project.***

  Due to Phase 1, CPNRD already has experience with the implementation of remote telemetry for irrigation management and data collection with wide acceptance and success. The district has worked with a trusted local contractor and is coordinating with the manufacturers of telemetry equipment and software.

  Through their contractor, CPNRD will proceed with procuring the equipment necessary for this project. Totalizing flow meters will be sized according to measurements of well discharge pipes, and models will be selected and purchased to best accommodate proper installation for accurate readings.

  Totalizing flow meters with remote telemetry will be purchased will occur begin in January 2025. Installations will be conducted in the fall and winters of 2025 and 2026. Following the deployment, a final report will be prepared for the Bureau of Reclamation by summer of 2026.

- *Describe any permits that will be required, along with the process for obtaining such permits.*

  No permits are required for the tasks performed under this project.

- *Identify and describe any engineering or design work performed specifically in support of the proposed project.*

No structural engineering or design work is necessary for this project. Installation contractors will conduct site surveys of individual meter installation sites to ensure proper meter installation and accuracy. No excavation or construction is necessary for this project.

- *Describe any new policies or administrative actions required to implement the project.*

  No new policies or administrative actions are required to implement the project.

- *Describe the current design status of the project. If additional design work is required prior to construction, describe the planned process and timeline for completing the design work.*

  The project equipment design template is based on the configuration used in Phase 1 and updated for Phase 2. The equipment design template consists of a flow meter, telemetry antenna, and the data management system.

- *Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural compliance; mobilization; begin construction/installation; construction/installation (50% complete); and construction/installation (100% complete). Was the expected timeline for environmental and cultural compliance discussed with the local Reclamation regional or area office?*

Schedule

Task	Start	Finish
Submit application for Reclamation Review	Dec 2023	Feb 2024
Successful notification of award from Reclamation	July 2024	July 2024
Sign contract with Reclamation	Oct 2024	Oct 2024
Approval of environmental and cultural compliance from Reclamation	Jan 2025	Jan 2025
Purchase flowmeters, telemetry, and DMS	Jan 2025	Jan 2025
Install approximately 50 telemetry-equipped flowmeters	Feb 2025	Mar 2025
Install approximately 50 telemetry-equipped flowmeters	Oct 2025	Mar 2026
Prepare final report for Reclamation	Apr 2026	Aug 2026

CPNRD is requesting that the environmental and cultural compliance review for the project be performed by the Nebraska-Kansas Area Office. CPNRD discussed this with Reclamation employee Joshua Neuffer. If needed, CPNRD can also perform the review. For planning purposes, it is assumed that the review will be done by January 2025.

Evaluation Criterion G – Collaboration

Please describe how the project promotes and encourages collaboration. Consider the following:

- *Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?*

  Yes, there was widespread support for Phase 1, and it is anticipated that there will be widespread support for Phase 2. During Phase 1, many landowners volunteered their wells to be equipped with flowmeters and telemetry. So many applied that not all the sites could be equipped. With the publication of the results of Phase 1 and the water savings achieved, there should not be a shortage of well owners volunteering for Phase 2.

  Remote telemetry and data management to improve irrigation water management has become very popular in the CPNRD over the past ten years. This began during Phase 1 with the initial telemetry sites installed to create the data collections system in the NRD. The irrigator can see first-hand how water management practices can improve efficiency and reduce water consumption. This educational component of the project is critical to improving water savings (Irmak Etal, 2022). This data will be extremely valuable to data users such as the COHYST group as they hydrologically model, predict water use and drought management. Also, CPNRD will receive water use credit from the PRRIP program.

  The NeDNR is not only a supporter of this project, but they are also a funding partner. The NeDNR will contribute $348,361 to Phase 2.

  The flowmeter and telemetry data will be used by the Platte River Cooperative Hydrology Study (COHYST). COHYST is an innovative surface water/groundwater model designed to improve the understanding of the hydrologic and geologic conditions and to understand the impact of water uses and management practices on long-term water supplies. The model extends from Chapman, Nebraska, to the upstream end of Lake McConaughy, Nebraska. The original COHYST groundwater model was developed in 1998 as part of the Nebraska, Wyoming, Colorado, and the U.S. Department of the Interior Cooperative Agreement partnership to address endangered species affecting the Platte River Basin. The COHYST model has since been modified to include surface water operations, groundwater flow model, and soil-water balance model. COHYST is used by the NeDNR, NRDs and other organizations to meet objectives of IMPs and the Platte River Recovery Implementation Program (PRRIP).

  COHYST sponsors include:

  - Central Nebraska Public Power and Irrigation District
  - Central Platte Natural Resources District
  - Nebraska Public Power District
  - TriBasin Natural Resources District
  - Twin Platte Natural Resources District
  - NeDNR

- Nebraska Game and Parks Commission

- *What is the significance of the collaboration/support?*

  The collaboration/support was critical for Phase 1 and is critical for implementation of Phase 2. By demonstrating how water savings can be achieved through implementation of flowmeters and telemetry, coupled with a data management system, irrigation practices will be improved. The significance is that water savings will be increased by raising awareness of these improved irrigation practices.

- *Will this project increase the possibility/likelihood of future water conservation improvements by other water users?*

  Yes, this innovative project will affect a large portion of the Platte River Basin and complements the regional COHYST hydrologic model. The successful implementation and completion of this project will have the potential to be replicated in other water management districts in the Platte River Basin, other portions of Nebraska, as well as other states. Similar networks are being developed in the neighboring NRDs.

- *Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?*

  Yes, water conserved due to reduced groundwater pumping will remain in the local aquifer to maintain groundwater levels for other uses including municipal, industrial, and domestic. It will also improve baseflow for surface water uses in the basin. This will also benefit threatened and endangered species.

- Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).

  The signed Resolution from the January 29, 2024, CPNRD Board of Directors meeting can be found in Appendix G, which codifies the support of this Board for this proposal. The Nebraska Department of Natural Resources Letter of Support can be found in Appendix H.

Evaluation Criterion H – Nexus to Reclamation

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity. Please consider:

- *Does the applicant have a water service, repayment, or operations and maintenance (O&M) contract with Reclamation?*

  CPNRD does not have such a relationship with Reclamation since no such facilities exist in the CPNRD.

- *If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?*

No. CPNRD is not a Reclamation contractor and does not receive Reclamation water by any means since no such facilities exist in CPNRD.

- *Will the proposed work benefit a Reclamation project area or activity?*

  No. Surface water Reclamation projects have been discussed in the past, but unfortunately no Reclamation projects were established in CPNRD.

- *Is the applicant a Tribe?*

  No

Performance Measures

Performance Measure A.2: Measuring Devices: *Good water management requires accurate and timely water measurement at appropriate locations throughout a conveyance system. This includes irrigation delivery systems and municipal distribution systems.*

Measuring Devices: A.2.b. Irrigation Metering: *Measuring devices that may be installed can include, but is not limited to, the following:*

Flowmeters: Water conservation will be achieved and quantified with the installation of permanently installed irrigation flowmeters with telemetry. A key metric of this proposal will be the objective to install 100 metered telemetry stations on large capacity irrigation wells in CPNRD. The data measured by the flowmeters will be connected by telemetry and software that transmits the information to users. This will allow management of water-use on a continuous basis, thereby maximizing operational efficiency and providing meaningful outreach to producers.

Potential benefits from improved irrigation delivery system measurement include being able to:

- *Facilitate accurate and equitable distribution of water within a district*

  For a water conservation program to work, accurate measurement of water pumped is necessary to ensure compliance with pumping allocations and to facilitate equitable distribution among users. Permanently installed totalizing flowmeters with telemetry will facilitate accurate and equitable water marketing in CPNRD under this proposal. The flow and telemetry data will be used to help monitor water use and efficiency. Producers will have real time information on irrigation consumption.

  Additionally, the data will be used by the COHYST model. COHYST is an innovative surface water/groundwater model designed to improve the understanding of the hydrologic and geologic conditions and to understand the impact of water uses and management practices on long-term water supplies. The model extends from Chapman, Nebraska, to the upstream end of Lake McConaughy, Nebraska. The original COHYST groundwater model was developed in 1998 as part of the Nebraska, Wyoming, Colorado, and the U.S. Department of the Interior Cooperative Agreement partnership to address endangered species affecting the Platte River

Basin. The COHYST model has since been modified to include surface water operations, groundwater flow model, and soil-water balance model. COHYST is used by the NeDNR, NRDs and other organizations to meet objectives of IMPs and the Platte River Recovery Implementation Program (PRRIP).

Pre-project estimations of baseline data:

Groundwater extractions have been measured in CPNRD using flowmeters and manual water-level measurements. Also, during Phase 1 of CPNRD Flowmeter, Telemetry and Data Management System, 100-irrigation wells were measured continuously. As a result, this will provide for an accurate baseline of past water use for evaluation of water savings due to the installation of meters with real-time telemetry.

Post-project methods for quantifying the benefits of projects to install measuring devices:

- *Compare post-project water measurement (deliveries, diversions, and waste/spills) data to pre-project data or estimates—taking into account other factors which may have cause changes.*

  Groundwater for irrigation pumped within the project area will continue to be measured and comparisons will be made between pre- and post- project pumping records within the project area to determine water savings. Data will be compared with rainfall totals to identify pumping trends with respect to rainfall.

- *Survey users to determine utility of the devices for decision making.*

  CPNRD will work with producers to analyze measured water use data. This analysis process will be seamless since the data is measured with flow meters and transmitted by telemetry to data users including the producer, CPNRD, and COHYST model data users. Based on the results users can be educated on water use and efficiency.

- *Present how measurement devices were used to identify water losses which were previously unknown and how these will be addressed.*

  Phase 1 data was used over a ten-year period to measure water use. The information was provided to producers to educate them on their irrigation practices and demonstrate times that overconsumption occurred. During Phase 2 the education process will continue with a new set of producers. Additionally, data users such as the COHYST users can calibrate the model to predict areas of overconsumption.

- *Document the benefits of any rate structure changes made possible by the installation of measuring devices.*

  Producers are not charged for water use; therefore this post-project method will not be used.

Performance Measure A.3: SCADA and Geographic Information Systems: *SCADA systems provide water managers with real-time data on the flow rates and volumes of water at key points within an irrigation water delivery system.*

- *How SCADA or SCADA/GIS implementation will differ from pre-project operations in terms of how improved data availability will be incorporated into daily operational decisions*

Real-time water use data will be available to farmers on 14,000 irrigated acres for improved water management. This will assist farmers in CPNRD with groundwater conservation.

Real-time water use will be available to the CPNRD and their irrigators, and for the COHYST model and complying with the Platte River Recovery Implementation Program (PRRIP).

***Pre-project estimations of baseline data*:**

- *Collect data on diversions and deliveries to water users*

Without remote telemetry, collection of groundwater pumping data for this project would be done manually. This would require CPNRD district staff to physically drive over 3,600 miles/year to each well site to manually record pumping data, which would be extremely labor intensive.

***Post-project methods for quantifying benefits of SCADA or SCADA/GIS system projects*:**

Track and record the diversions to water users and compare to pre-project diversions. This would show results of improved management if yearly fluctuations in weather are accounted for.

Upon the successful completion of this project, pumping data will be supplied to irrigators and CPNRD water managers daily. This frequent data will enable farmers to improve seasonal irrigation efficiency (timing irrigation events throughout the season) and aid basin-wide water management by delivering daily water use data to CPNRD water managers.

Budget Detail and Narrative Section,

The non-federal cost share required for the project has been appropriated by CPNRD based on the anticipated approval of this project by the Bureau of Reclamation. Funding in the amount of $291,126 will be contributed by the Nebraska Department of Natural Resources (NeDNR) to contribute to the Flowmeter, Telemetry and Data Management System (see attached letter of commitment) upon the successful award of this proposal. The CPNRD has budgeted over the two-year duration.

Funds expended by CPNRD will be used to purchase flowmeter and telemetry equipment, miscellaneous equipment for installation, and contractor services for installation. Grant funds from the Bureau of Reclamation would be used for the same expenses. No other federal sources of funds have been requested. No pending funding requests would negatively affect the project if not approved.

Budget Detail

Budget Item Description	Computation $/unit	Computation Quantity	Quantity Type (hours/days)	Total Cost
Personnel				
	Not requesting reimbursement for personnel			
Fringe Benefits				
	Not requesting reimbursement for fringe benefits			
Travel				
	Not requesting reimbursement for travel			
Administrative and Legal Expenses				
	Not requesting reimbursement for adm. and legal expenses			
Land, Structures, Rights-of-Way, Appraisals etc.				
	Not requesting reimbursement for land, structures, rights-of-way, appraisals			
Relocation Expenses and Payments				
	Not requesting reimbursement for relocation expenses and payments			
Architectural and Engineering Fees				
	Not requesting reimbursement for architectural and engineering fees			
Other Architectural and Engineering Fees				
Data Acquisition and Processing	$24,000	1		$24,000
Project Inspection Fees				
	Not requesting reimbursement for project Inspection Fees			
Site Work				
	Not requesting reimbursement for site work			
Demolition and Removal				
	Not requesting reimbursement for site work			
Construction				
Flowmeter Telemetry DMS Installation	$450.00	100		$45,000
Equipment				

Flowmeter, Telemetry, and Data Mgmt. System	$4,603.20	100	each	$460,320
Supplies and Materials				
	Not requesting reimbursement for supplies and materials			
Miscellaneous				
	Not requesting reimbursement for miscellaneous			
Other Direct Costs				
	Not requesting reimbursement for other direct costs			
Contractual				
	Not requesting reimbursement for contractual			
Contingency 10%				
				$52,932
TOTAL COST				**$582,252**

Budget Narrative Section

Budget Narrative

Personnel Salaries and Wages

The CPNRD is not requesting reimbursement for salaries and wages for personnel costs.

Fringe Benefits

The CPNRD is not requesting reimbursement for fringe benefits.

Travel

The CPNRD is not requesting reimbursement for There is no travel authorized for this project nor included in the budget proposal.

Administrative and Legal Expenses

The CPNRD is not requesting reimbursement for administrative and legal expenses.

Land, Structures, Right-of-Way, Appraisal

The CPNRD is not request reimbursement for land, structures, right-of-way, appraisal.

Relocation Expenses and Payments

The CPNRD is not requesting reimbursement for relocation expenses and payments.

Architectural and Engineering Fees

The CPNRD is not requesting reimbursement for architectural and engineering fees.

Other Architectural and Engineering Fees

The CPNRD is requesting reimbursement for other architectural and engineering fees for data acquisition and processing. This cost will be advertised and bid. The estimated cost is $24,000.

Project Inspection Fees

The CPNRD is not requesting reimbursement for project inspection fees.

Site Work

The CPNRD is not requesting reimbursement for site work.

Demolition and Removal

The CPNRD is not requesting reimbursement for demolition and removal.

Construction

The construction expenditures are anticipated for the installation and data acquisition. The estimated cost is $45,000. The time estimate for installation of each piece of equipment was determined from the average usage on similar past projects. This cost will be advertised and bid.

Equipment

All equipment to be used on this project will be owned and purchased by CPNRD. The equipment purchases will be advertised and bid. The estimated cost is $460,320. The time estimate for installation of each piece of equipment was determined from the average usage on similar past projects. The estimated cost was obtained from a quote from a vendor.

Materials and Supplies

The CPNRD is not requesting reimbursement for materials and supplies.

Miscellaneous

The CPNRD is not requesting reimbursement for miscellaneous.

Other Direct Costs

The CPNRD is not requesting reimbursement for other direct costs.

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Contractual

The CPNRD is not requesting reimbursement for contractual expenditures.

Contingency

The 10% contingency expense of $52,932 is listed as miscellaneous is for unforeseen expenses that might arise, such as inflation, repair of damaged flowmeters and telemetry equipment during installation, electrical components, wire, freight, or tools that might break.

Indirect Costs

The CPNRD is not requesting reimbursement for indirect costs.

Environmental and Regulatory Compliance Costs

The CPNRD is requesting that Reclamation conduct the environmental and regulatory compliance review. This has been discussed with the Nebraska-Kansas Area Office and the Area Office and they agreed to perform the work. If needed, the CPNRD will conduct the environmental and regulatory compliance review.

Third-Party In-Kind Contributions

The CPNRD does not anticipate any contributions matching this description.

Local Match, NeDNR	$291,126
Federal Match	$291,126
Total Project Cost	**$582,252**

Environmental and Cultural Resources Compliance

- *Will the proposed project impact the surrounding environment (e,g., soil (dust), air, water (quality and quantity),animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.*

  No impacts to the surrounding environment, including soil, air, water, and species habitat are expected. There will be no earth disturbing activities or actions that would affect these resources. A flowmeter and telemetry antenna will be added to an existing irrigation well with no heavy equipment involved.

- *Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?*

  There are Federally listed threatened and endangered species within the counties that the proposed action will take place in. However, the actions to install the telemetry meters are insignificant and temporary. Listed species known to occur within the identified counites will not be affected.

- *Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?*

  Yes, there are surface waters inside the project boundary that fall under CWA jurisdiction and some of these surface waters may be classified as wetlands. However, the actions to install the telemetry devices are minimal and will not disturb or impact surface waters or potential wetlands.

- *When was the water delivery system constructed?*

  The actual locations of the irrigation wells for Phase 2 have not been selected. However, irrigation wells could be up to sixty years old.

- *Will the proposed project result in any modifications of or effects to, individual features of an irrigation system (e.g., headgates, canals, or fumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.*

  Yes, a flowmeter and telemetry antenna will be added to existing irrigation wells. The actual locations of the irrigation wells for Phase 2 have not been selected. Possible irrigation wells

where equipment is deployed could be up to sixty years old. Minimal disturbances to the environment will occur since no construction will occur.

- *Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or State Historic Preservation Office can assist in answering this question.*

  NA, the actual locations of the irrigation wells for Phase 2 have not been selected. However, sites listed on the National Register of Historic Places will not be selected.

- *Are there any known archeological sites in the proposed project area?*

  No, there are no buildings, structures, or features listed or eligible for listing on the National Register of Historic Places within or near the proposed actions. Additionally, History Nebraska does not list any buildings, structures, or features within or near the area.

- *Will the proposed project have a disproportionately high and adverse effect on any communities with environmental justice concerns?*

  No, this project will take no actions that will disturb or alter natural or cultural resources that would hinder, displace, or affect disproportionally high, low-income or minority populations.

- *Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on Tribal lands?*

  No, this project will not limit access to the ceremonial use of Indian scared sites or result in other impacts on Tribal lands.

- *Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?*

  No, the proposed project actions will not contribute to the introduction, continued existence, or spread of noxious weed or non-native invasive species. The project does not involve a watercraft and does not involve the transfer of equipment from one aquatic resource to another.

Required Permits or Approvals

No permits will be required for this project.

Overlap or Duplication of Effort Statement

The CPNRD does not have any projects that overlap or duplicate the effort of the proposed project in terms of activities, costs, or commitment of key personnel. The proposed project has

not been or will be submitted for funding considerations to any other potential funding source – whether it be Federal or non-Federal.

Conflict of Interest Disclosure Statement

CPNRD does not have any actual or potential conflict of interest at the time of submission, nor do we anticipate having any conflict of interest during the Federal award period.

Applicability

CPNRD will take the appropriate steps to avoid conflicts of interest in its responsibilities under or in respect to Federal financial assistance agreements. The procurement of supplies, equipment, construction, and services by recipients and by subrecipients shall be in accordance with the provisions of 2CFR§200.318,

Notification

CPNRD will disclose in writing any conflict of interest to Reclamation. CPNRD will establish internal controls that include procedures to identify, disclose, and mitigate or eliminate identified conflicts of interest.

Restrictions on Lobbying

CPNRD will not use funds under a grant or cooperative agreement for lobbying activities and will provide the required certifications and disclosures. CPNRD does retain a lobbyist and that information is reported in Form SF-LLL.

Review Procedures

CPNRD will resolve any conflict of interest if determined by the Financial Assistance Officer.

Uniform Audit Reporting Statement

CPNRD did not receive $750,000 or more in Federal grant award funds for the most recent fiscal year of 2023. The district did receive greater than $750,000 in award funds during the period of 2020/2021.

Unique Entity Identifier and System for Award Management

The CPNRD is registered with SAM under the Unique Entity Identifier TH5CAGKVG7X8.

Certification Regarding Lobbying

CPNRD is requesting for than $100,000 in federal funding and is certifying such in Form SF-424 which is attached to this application.

Disclosure of Lobbying Activities

A fully completed and signed SF-LLL is attached to this application.

Official Resolution

The Official CPNRD Board Resolution is attached to this application.

Letters of Funding Commitment

The Nebraska-Department of Natural Resources Letter of Funding Commitment is attached to this application.

Appendix A Application for Federal Assistance SF-424

Appendix B Budget Information SF-424C

Appendix C Assurances SF-424D

Appendix D Project Abstract Summary OMB Form 4040-0019

Appendix E CPNRD Integrated Management Plan

Appendix F Disclosure of Lobbying Activities SF-LLL

Appendix G Board Resolution

Appendix H Letter of Financial Commitment from NeDNR

Appendix I Quote from McCrometer

Appendix J Budget Detail and Narrative Section

Appendix K Project Narrative

BOARD RESOLUTION 23-004

Of the

Central Platte Natural Resources District

RESOLUTION to submit an application on behalf of Central Platte Natural Resources District and the Nebraska Department of Natural Resources to the U.S. Bureau of Reclamation's WaterSMART Water and Energy Efficiency Grant Program.

WHEREAS: The Central Platte Natural Resources District and the Nebraska Department of Natural Resources wish to develop a water flowmeter and telemetry network to better monitor and manage groundwater resources.

RESOLVED:

1. Lyndon Vogt, General Manager of Central Platte NRD has the legal authority to enter into contracts and agreements with all entities involved.

2. The Central Platte NRD Board of Directors approves this application for submittal.

3. Central Platte NRD will work with the U.S. Bureau of Reclamation to meet all deadlines and project deliverables.

Mick Reynolds

Board Chairman

Central Platte Natural Resources District

CPNRD
CENTRAL PLATTE
NATURAL RESOURCES DISTRICT

215 Kaufman Ave Grand Island NE 68803
T: (308) 385-6282 F: (308) 385-6285
www.cpnrd.org

January 29, 2024

To Whom It May Concern,

The Central Platte Natural Resources District (NRD) is fully committed to providing project funding as part of Central Platte NRD's applications to the U.S. Bureau of Reclamation's WaterSMART Water and Energy Efficiency grant.

The Flowmeter, Telemetry, and Data Management System Project, submitted under the Water and Energy Efficiency Grant totals $582,252, of which the Central Platte NRD commits $291,126. The breakdown of costs is as follows:

Flowmeter Telemetry Data Management System Project	
DESCRIPTION	**COST**
Construction/Installation	$45,000
Equipment	$460,320
Miscellaneous	$24,000
Subtotal	$529,320
Contingency 10%	$52,932
Total	**$582,252**
NeDNR/CPNRD Funds	$291,126
Bureau of Reclamation	$291,126

The Central Platte NRD funding commitments will be available upon successful completion and receipt of the WaterSMART monies. There are no time constraints or other contingencies associated with the matching funds.

Sincerely,

Lyndon Vogt
General Manager
Central Platte NRD

NEBRASKA

Good Life. Great Water.

DEPT. OF NATURAL RESOURCES

Jim Pillen, Governor

February 1, 2024

Lyndon Vogt, General Manager
Central Platte Natural Resources District
215 Kaufman Ave
Grand Island, NE 68803

Dear Lyndon,

Please consider this letter a formal expression of support and commitment from the Nebraska Department of Natural Resources (Department) to provide up to $291,126 of matching state funding for the Central Platte Natural Resource District's (District) Bureau of Reclamation WaterSMART grant application for the Phase II Groundwater Irrigation Flowmeter & Data Program project. The Department views this type of project as an investment in long-term water planning that enhances our understanding of water demands through cyclical water supply periods and gives producers data to inform their decision-making. The Department's current plans pertaining to the project area include an integrated management plan developed in partnership with your District and the Upper Platte Basin-Wide Plan. These two documents both recognize the benefits of the types of activities this grant will help to fund and aim to support shared goals aimed at the long-term sustainability of irrigation uses in the basin.

Should your grant application be approved, Department staff will work with you to develop a contract that implements this financial commitment. Once again, the Department fully supports your District's efforts to increase the number of measured irrigation wells to improve producer water management and to enhance our understanding of water demands. The Department appreciates your District's efforts in working to support the state's integrated management plan and Basin-Wide plan goals.

Sincerely,

Thomas E Riley

Thomas E. Riley, P.E., Director
Department of Natural Resources

Thomas E. Riley, P.E., Director
Department of Natural Resources
245 Fallbrook Blvd., Suite 201 OFFICE 402-471-2363
Lincoln, Nebraska 68521 FAX 402-471-2900

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