NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Davis Creek Dam Erosion Repair Project

SPONSOR'S *PRIMARY CONTACT INFORMATION* **(Not Consultant's)**

Sponsor Business Name: Twin Loups Reclamation and Irrigation Districts

Sponsor Contact's Name: Tyler Klabenes

Sponsor Contact's Address: 80309 487th Ave, Scotia, NE 68875

Sponsor Contact's Phone: 308-245-3171

Sponsor Contact's Email: tyler_tlrd@nctc.net

1. **Funding** amount requested from the Water Sustainability Fund:

   Grant amount requested. $233,160

   - If requesting less than 60% cost share, what %? N/A

   If a loan is requested amount requested. $ N/A

   - How many years repayment period? N/A
   - Supply a complete year-by-year repayment schedule. N/A

2. **Neb. Rev. Stat. § 2-1507 (2)**

   Are you applying for a **combined sewer overflow project**? YES☐ NO☒

   If yes:

- Do you have a Long Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality? YES☐ NO☒
- Attach a copy to your application. N/A
- What is the population served by your project? N/A
- Provide a demonstration of need. N/A
- **Do not complete the remainder of the application.**

3. **Permits Required/Obtained** Attach a copy of each that has been obtained. For those needed, but not yet obtained (box **"NO"** checked), 1.) State when you will apply for the permit, 2.) When you anticipate receiving the permit, and 3.) Your estimated cost to obtain the permit.

(N/A = Not applicable/not asking for cost share to obtain)
(Yes = See attached)
(No = Might need, don't have & are asking for 60% cost share to obtain)

G&P - T&E consultation (required)	N/A☐	Obtained: YES☐	NO☒
DNR Surface Water Right	N/A☒	Obtained: YES☐	NO☐
USACE (e.g., 404/other Permit)	N/A☐	Obtained: YES☐	NO☒
FEMA (CLOMR)	N/A☒	Obtained: YES☐	NO☐
Local Zoning/Construction	N/A☒	Obtained: YES☐	NO☐
Cultural Resources Evaluation	N/A☒	Obtained: YES☐	NO☐
Other (provide explanation below)	N/A☒	Obtained: YES☐	NO☐

This project will require standard review and permitting from USACE under Section 404 of the Clean Water Act. This project will most likely fall under a Nationwide Permit, but the final determination will occur after design is completed and potential environmental impacts are fully understood. Any potential negative effects to threatened and endangered species will also be determined and the Nebraska Game and Parks Commission (NGPC) will be consulted. These permits / consultations will be obtained in fall 2025, prior to construction beginning at the end of the 2025 irrigation season.

4. **Partnerships**

List each Partner / Co-sponsor, attach documentation of agreement:
The Twin Loups Reclamation and Irrigation Districts (Twin Loups) is the sole sponsor of the Davis Creek Dam Erosion Repair Project, and has received support from several partners. Letters of support from each partner are included in Attachment A. These partners include:

United States Bureau of Reclamation
The Bureau of Reclamation constructed the Davis Creek Dam and maintains ownership, but operations and maintenance are handled by Twin Loups. The Bureau of Reclamation supports the project to ensure that Twin Loups can continue supplying water for the numerous public benefits the Davis Creek Reservoir provides.

Lower Loup Natural Resources District
The Lower Loup Natural Resources District (LLNRD) has statutory responsibilities to protect and conserve natural resources within its jurisdiction, which includes the Davis Creek Dam. Additionally, LLNRD maintains recreation features in the area around the reservoir. LLNRD recognizes the importance of Davis Creek Dam to the regional irrigation system, as well as the recreational and wildlife benefits it provides.

Nebraska Department of Natural Resources Dam Safety Division
The Dam Safety Division regulates the construction, operation, and maintenance of dams in Nebraska to protect life and property from dam failures. The Dam Safety Division recognizes the importance of completing this project and lends its support in protecting and maintaining the Davis Creek Dam and Reservoir.

Nebraska Game and Parks Commission
The Nebraska Game and Parks Commission (NGPC) is charged with stewardship of Nebraska's fish, wildlife, state parks, and outdoor recreation resources. NGPC supports Twin Loups in this application as the Davis Creek Reservoir provides critical recreational and wildlife habitat benefits in the region.

Identify the roles and responsibilities of each Partner / Co-sponsor involved in the proposed project regardless of whether each is an additional funding source.

Twin Loups is the sole project sponsor and has the resources and capabilities to implement the proposed erosion prevention project. Twin Loups will hire a consulting engineering firm to design and permit the project, and a contractor to construct the project.

5. **Other Sources of Funding**

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

Total project costs are estimated to be $388,600. These costs include design work, earthwork, shoreline armoring, administration work, bidding, construction oversight, and the acquisition of all relevant permits. A breakdown of cost distributions is included in the table below. Twin Loups is the sole project sponsor and is requesting 60% of the total costs from WSF ($233,160). The remaining costs will be covered by Twin Loups ($153,933). If the WSF funds are not obtained, Twin Loups will be forced to explore other potential funding sources.

Task	Requested from WSF	Twin Loups Funds	Total Cost
Mobilization	$11,400	$7,600	$19,000
Bonding and Insurance	$4,200	$2,800	$7,000
Site Grading	$6,000	$4,000	$10,000
Rock Riprap	$129,498	$86,332	$215,830
Geotextile Fabric	$8,430	$5,620	$14,050
Seeding, Fertilizer, and Mulch	$5,400	$3,600	$9,000
Construction Contingency	$41,232	$27,488	$68,720
Engineering Design and Permitting	$27,000	$18,000	$45,000
Total	**$233,160**	**$155,400**	**$388,600**

6. **Overview**

In 1,000 words *or less*, provide a brief description of your project including the nature/purpose of the project and its objectives. Do not exceed one page!

The purpose of this project is to protect the Davis Creek Dam from an ongoing erosion issue. Wind rushing along the open water stretches of the Davis Creek Reservoir causes large waves to break over an exposed, sandy cliff just east of the dam embankment (Figure 1). This has been an ongoing issue for more than a decade. If this erosion is not stopped, eventually it has the potential to reach the dam embankment and cause a breach.

The Bureau of Reclamation constructed and maintains ownership, of the dam, but operations are handled by Twin Loups. The Davis Creek Reservoir was originally constructed for use as an irrigation water storage and supply facility. Water stored in the reservoir supplies the Fullerton Canal downstream, which is used to irrigate more than 35,000 acres of productive cropland.

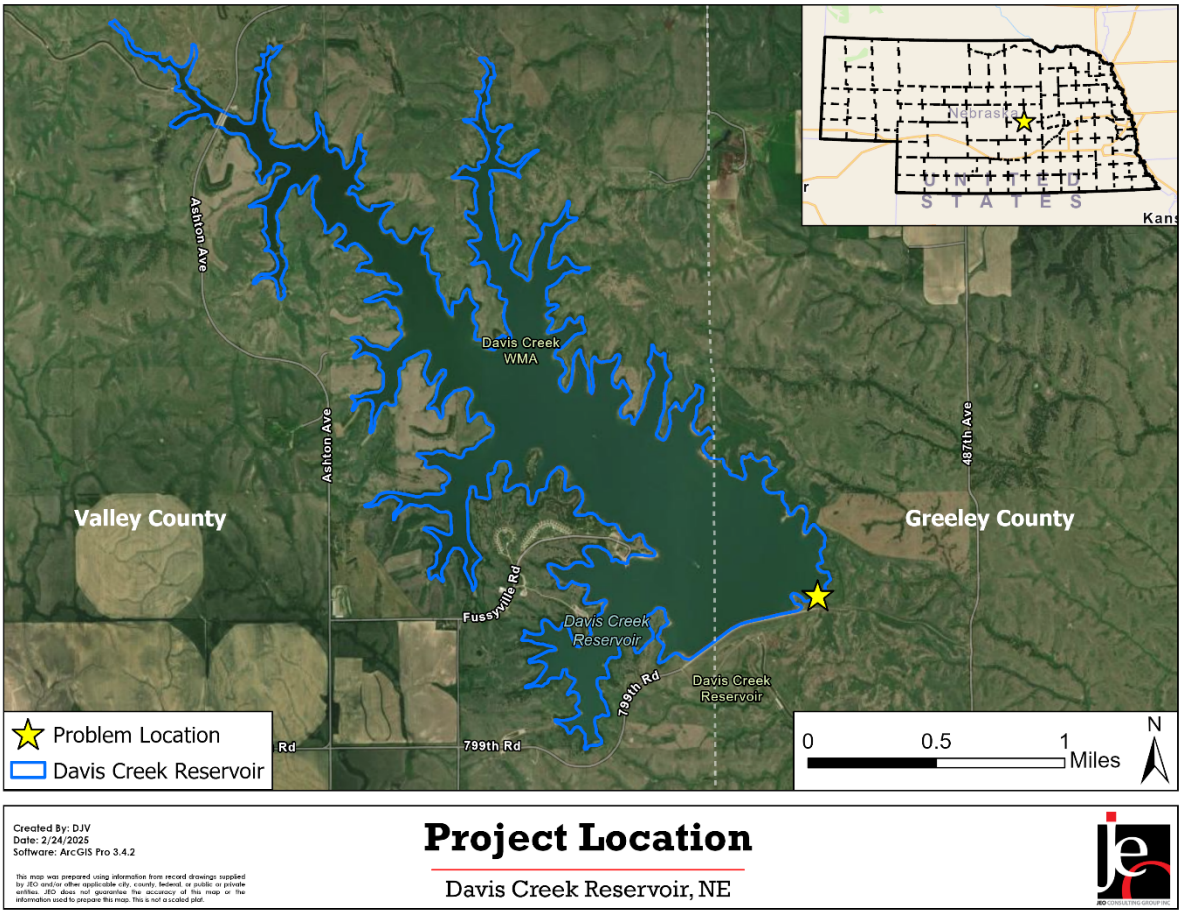

Figure 1: Project Location

While the dam embankment itself is maintained in good working condition, the rate of erosion of the identified problem site has accelerated in recent years. As shown in Figure 2, between 2020 and 2024 the shoreline eroded, on average, by approximately 20 feet laterally, and greater than 50 feet in some locations. The continued erosion of this vulnerable area has detrimental effects on the operation of the reservoir. If this erosion is allowed to continue unchecked, it has the potential to undermine the dam's integrity. This could lead to a breach of the dam embankment. A dam breach would not only threaten the health and safety of the public downstream of the dam but would also disrupt operations of the Fullerton Canal and would have disastrous economic impacts on the farmers who are dependent on the canal system. To minimize erosion, Twin Loups maintains the reservoir at a reduced capacity approximately 10 feet below its designed full pool elevation. This reduces the rate of erosion occurring at the problem site, but also negatively affects the usage of the reservoir for irrigation water storage, as well as recreation and fish habitat. Maintaining the lower pool elevation reduces the

volume of water available behind the reservoir by approximately 10,000 acre-feet.

Figure 2: Historic Shoreline Extents

To rectify these issues, Twin Loups is requesting funds for the design and construction of erosion protection measures in the identified problem area. Erosion prevention improvements will be made to 600 linear feet of shoreline that is at the greatest risk (Figure 3). Improvements will include grading the eroded shoreline to a flatter slope, excavating a trench across the length of the eroded shoreline, installing geotextile fabric and backfilling the trench with rock riprap, armoring the exposed shoreline with additional rock riprap, and seeding the area disturbed by construction activities. The geotextile fabric will hold the existing soil in place, while the rock riprap will break up the erosive forces of waves while ensuring the fabric cannot move. The dam embankment itself will not be altered but will benefit from the protection provided by this project.

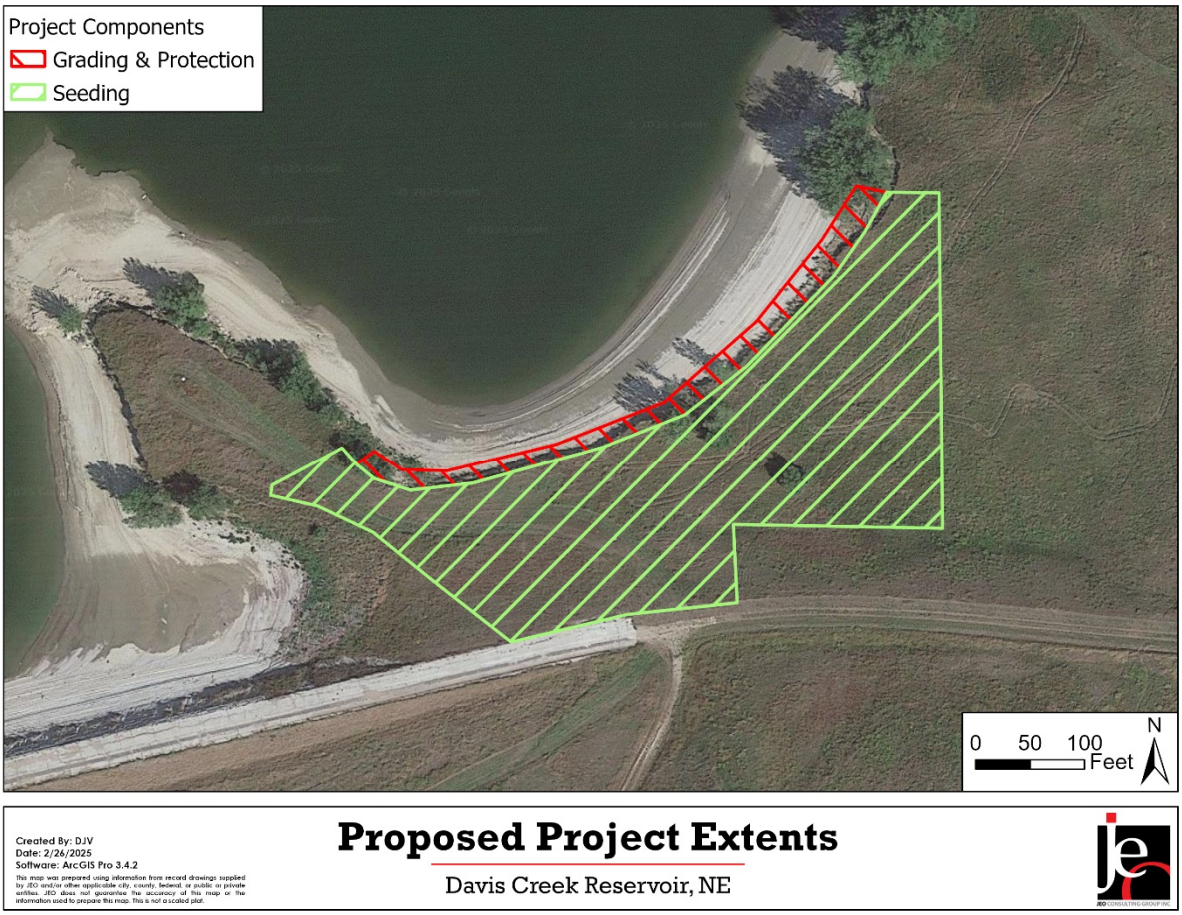

Figure 3: Proposed Project Extents

7. Project Tasks and Timeline

Identify what activities will be conducted to complete the project, and the anticipated completion date.
For multiyear projects please list (using the following example):

Tasks	Year 1$	Year 2$	Year 3$	Remaining	Total $ Amt.
Permits	$18,000				$18,000
Engineering		$96,000			$96,000
Construction		$87,000	$96,000		$183,000
Close-out				$8,000	$8,000
				TOTAL	$305,000

- What activities (Tasks) are to be completed.
- An estimate of each Tasks expenditures/cost per year.

- Activities in years 4 through project completion under a single column.

The schedule assumes that the WSF grant is approved, and funding is made available mid-summer 2025. Design work would then be completed in early fall 2025, and construction would begin after the irrigation season when the reservoir is at its lowest, approximately October 2025. Construction would then continue through the winter and be completed prior to the 2026 irrigation season. The table below shows the timeline and associated costs.

Task	Year 0 (2025)	Year 1 (2026)	Total
Design & Permitting	$45,000	-	$45,000
Construction	$185,300	$158,300	$343,600
		Total	$388,600

8. **IMP**

Do you have an **Integrated Management Plan** in place, or have you initiated one? YES☐ NO☐ Sponsor is not an NRD☒

Section B.

DNR DIRECTOR'S FINDINGS

Prove Engineering & Technical Feasibility
(Applicant must demonstrate compliance with Title 261, CH 2 - 004)

1. Does your project include physical construction (defined as moving dirt, directing water, physically constructing something, or installing equipment)?
YES☒ NO☐

If you answered "YES" you must answer all questions in section 1.A.
If you answer "NO" you must answer all questions in section 1.B.

If "YES", it is considered mostly structural, so answer the following:

1.A.1 Insert a feasibility report to comply with Title 261, Chapter 2, including engineering and technical data;
Preliminary investigation of the project has been conducted by a qualified Professional Engineer hired by Twin Loups. The findings of this investigation were used to create a conceptual design and cost estimate. Conceptual design information is included in Attachment B. The investigation determined that the proposed erosion prevention project was feasible, economical, and reasonable.

1.A.2 Describe the plan of development (004.01 A);
The proposed project would include improvements made to 600 linear feet of shoreline determined to be the most vulnerable. Topsoil will be removed from the area surrounding the shoreline which will be disturbed during construction and stockpiled onsite. The existing shoreline is near vertical, and will be re-graded and flattened to a slope of approximately 2:1 (Horizontal:Vertical). A three-foot-wide by three-foot-deep trench will then be excavated at the bottom toe of the graded shoreline for the length of the repair. The trench and shoreline will be lined with a geotextile fabric to hold the existing soil in place. The trench will then be backfilled with type B/C rock riprap. Rock riprap will also be placed along the length of the exposed shoreline to armor the shoreline against wave action erosion and hold the geotextile fabric in place. Disturbed areas will then have topsoil replaced and new seeding will be established.

1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B);
No field investigations have yet been completed. If funding is made available and the design continues beyond the conceptual stage, a professional topographical survey will be conducted throughout the proposed project site and surrounding area. This information will be used to refine the design and quantities. A wetland delineation will also be conducted throughout the proposed project site and surrounding area. This will be done by qualified environmental scientists in accordance with the US Army Corps of Engineers Wetlands Delineations

Manual. This information will be used to influence the final design and determine environmental impacts and any potential mitigation needs for permitting purposes.

1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C);
Applicable conceptual drawings are included in Attachment B.

1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D);
No water rights or land rights are required to implement this project.

1.A.6 Discuss each component of the final plan (004.01 E);
The final project will consist of the following major components:

- Field Investigations
  - Includes professional topographical survey and wetland delineations.
  - Will be conducted throughout Summer 2025, if funding is made available.
- Design and Permitting
  - Conceptual design has been completed and will continue to be informed and revised, and completed in the Summer of 2025.
  - Applicable permits will be obtained prior to construction.
- Construction
  - Includes physical construction activities such as earthwork, as well as administration work, bidding, and construction oversight and inspection.
  - Anticipated to begin October 2025 and be completed by Spring 2026, prior to the 2026 irrigation season.
- Operations and Maintenance
  - Ongoing for the life of the structure.
  - Twin Loups will incorporate this site into their current maintenance plan for the Davis Creek Dam.

1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1);
No geological or geotechnical investigation is required to implement this project. The existing dam embankment will not be altered in any way. Construction activities will occur along the shoreline east of the dam embankment, as previously shown in Figure 3.

1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2);
No hydrologic investigation is required to implement this project. The existing dam embankment will not be altered in any way. Construction activities will occur

along the shoreline east of the dam embankment, as previously shown in Figure 3.

1.A.9 When applicable include the criteria for final design including, but not limited to, soil mechanics, hydraulic, hydrologic, structural, embankments and foundation criteria (004.01 E 3).
Applicable industry standards will be followed during the final design of the proposed project. The existing dam embankment will not be altered in any way. Construction activities will occur along the shoreline east of the dam embankment, as previously shown in Figure 3.

If "NO", it is considered mostly non-structural, so answer the following:

1.B.1 Insert data necessary to establish technical feasibility (004.02); N/A

1.B.2 Discuss the plan of development (004.02 A); N/A

1.B.3 Describe field or research investigations utilized to substantiate the project conception (004.02 B); N/A

1.B.4 Describe any necessary water and/or land rights (004.02 C); N/A

1.B.5 Discuss the anticipated effects, if any, of the project upon the development and/or operation of existing or envisioned structural measures including a brief description of any such measure (004.02 D). N/A

Prove Economic Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 005)

2. Provide evidence that there are no known means of accomplishing the same purpose or purposes more economically, by describing the next best alternative.
The only other feasible alternative to prevent the ongoing erosion issue is to continue maintaining the reservoir at a reduced storage capacity. To minimize erosion at the problem site, Twin Loups maintains the reservoir at a level approximately 10 feet below its designed full pool elevation. This reduces the rate of erosion occurring at the problem site, but negatively affects the usage of the reservoir for irrigation water storage, as well as recreation and fish and wildlife habitat. While this operation technically has no up-front cost to Twin Loups, the lower pool elevation provides approximately 10,000 fewer acre-feet of water than the full pool elevation. This greatly reduces the water available for the beneficial uses the reservoir provides for irrigation supply, recreation, and fish / wildlife habitat.

3. Document all sources and report all **costs** and **benefit data** using current data, (commodity prices, recreation benefit prices, and wildlife prices as prescribed by the Director) using both dollar values and other units of measurement when appropriate (environmental, social, cultural, data improvement, etc.). The period of analysis for economic feasibility studies is the project life. (Title 261, CH 2 - 005).

Costs were estimated by a professional engineer hired by Twin Loups. The total cost of the project is estimated to be $388,600. Benefits were estimated based on information provided by UNL and LLNRD. The benefits provided by the Davis Creek Reservoir are astronomical in comparison to the costs of this erosion protection project.

The water stored in the Davis Creek Reservoir is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. According to the 2024 Nebraska Farm Real Estate Report, the average value of irrigated cropland in this region is $8,532 per acre. The average value of non-irrigated cropland (dryland) is $4,242 per acre. The irrigation capability provided by the Davis Creek Reservoir has collectively increased the real estate value of the 35,000 acres of farmland by approximately $150,000,000. The potential loss of this irrigation supply would be devastating to the local and regional economy.

Davis Creek Reservoir is also a popular recreation destination. Between 2022 and 2024, there were an average of 55,140 annual visitors to the reservoir, and 4,811 overnight campsite reservations. At a cost of $30 per night, this results in an average annual revenue of approximately $144,330 in campground fees.

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

Total project costs are estimated to be $388,600. These costs include design work, earthwork, shoreline armoring, administration work, bidding, construction oversight, and the acquisition of all relevant permits. A breakdown of cost distributions is included in the table below. Twin Loups is the sole project sponsor and is requesting 60% of the total costs from WSF ($233,160). The remaining costs will be covered by Twin Loups ($155,440).

Task	Requested from WSF	Twin Loups Funds	Total Cost
Mobilization	$11,400	$7,600	$19,000
Bonding and Insurance	$4,200	$2,800	$7,000
Site Grading	$6,000	$4,000	$10,000
Rock Riprap	$129,498	$86,332	$215,830

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Construction Contingency	$41,232	$27,488	$68,720
Engineering Design and Permitting	$27,000	$18,000	$45,000
Total	**$233,160**	**$155,400**	**$388,600**

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

The primary tangible benefits provided by this project are water supplied for irrigation and recreation. The water stored in the Davis Creek Reservoir is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. According to the 2024 Nebraska Farm Real Estate Report, the average value of irrigated cropland in this region is $8,532 per acre. The average value of non-irrigated cropland (dryland) is $4,242 per acre. The irrigation capability provided by the Davis Creek Reservoir has collectively increased the real estate value of the 35,000 acres of farmland by approximately $150,000,000. The potential loss of this irrigation supply would be devastating to the local and regional economy.

Davis Creek Reservoir is also a popular recreation destination. Between 2022 and 2024, there were an average of 55,140 annual visitors to the reservoir, and 4,811 overnight campsite reservations. At a cost of $30 per night, this results in an average annual revenue of approximately $144,330 in campground fees.

Secondary benefits are provided through enhancements to fish and wildlife habitat provided by the reservoir, and benefits associated with groundwater recharge due to infiltration and seepage from the reservoir and canal system.

3.C Present all cost and benefit data in a table to indicate the annual cash flow for the life of the project (005.03).

The table below provides a summary of the value of cost and benefit information associated with the project. The life of the project is estimated at 50 years. As discussed above, the benefits provided by the Davis Creek Reservoir are astronomical in comparison to the costs of this erosion protection project.

Continued operation of the Davis Creek Reservoir is vital to the local and regional economy.

Action	Total Cost	Irrigated Farmland Valuation Increase	Annual Recreation Value	Benefit – Cost Ratio*
Erosion Prevention	$388,600	$150,000,000	$144,330	7.7

*Note: Benefit – Cost Ratio annualized over a 50-year lifespan.

3.D In the case of projects for which there is no generally accepted method for calculation of primary tangible benefits and if the project will increase water sustainability, demonstrate the economic feasibility of such proposal by such method as the Director and the Commission deem appropriate (005.04). (For example, show costs of and describe the next best alternative.)
N/A

Prove Financial Feasibility

(Applicant must demonstrate compliance with Title 261, CH 2 - 006)

4. Provide evidence that sufficient funds are available to complete the proposal.
Twin Loups has sufficient funds and is committed to paying its portion of the construction fees ($155,440). Twin Loups is legally responsible for all operations and maintenance activities at the Davis Creek Reservoir, including associated financial obligations. Their annual operating budget is approximately $3,900,000. This includes funds set aside for the operation and maintenance of the irrigation infrastructure they are responsible for, such as the Davis Creek Reservoir. Twin Loups is qualified, responsible, and legally capable of carrying out this project.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace).
Twin Loups has an annual operating budget of approximately $3,900,000. This includes funds set aside for the operation and maintenance of the irrigation infrastructure they are responsible for, such as the Davis Creek Reservoir.

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

7. Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.).
This erosion prevention project will work to avoid and minimize environmental impacts to the greatest extent feasible. Construction activities will take place outside of the migratory bird nesting season (April – August). The design of the erosion control features will include fieldwork by qualified environmental scientists to delineate any wetlands that would potentially be affected by

construction. Any potential permanent impacts to wetlands will be mitigated as required under Clean Water Act Section 404.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds.
The Twin Loups Reclamation and Irrigation Districts were jointly organized in 1958 as a legal entity of the State of Nebraska with the duty to operate and maintain the North Loup Division of the Bureau of Reclamation's Pick-Sloan Missouri Basin Program, which includes the Davis Creek Reservoir. Twin Loups is legally responsible, and liable, for all operations and maintenance activities. Twin Loups employs full-time maintenance personnel who are responsible for ongoing operations and maintenance of the Davis Creek Dam.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state.
The Nebraska Department of Natural Resources (NeDNR) regulates the design, construction, operations, and maintenance requirements of dams in Nebraska. Twin Loups actively follows applicable regulatory requirements. Implementation of this erosion prevention project will allow Twin Loups to continue meeting applicable NeDNR requirements.

10. Are land rights necessary to complete your project? YES☐ NO☒
The Davis Creek Dam is owned by the United States Bureau of Reclamation but operated by Twin Loups. The Bureau of Reclamation supports this project, and therefore no land rights will be required for implementation.

If yes:

10.A Provide a complete listing of all lands involved in the project. N/A

10.B Attach proof of ownership for each easements, rights-of-way and fee title currently held. N/A

10.C Provide assurance that you can hold or can acquire title to all lands not currently held. N/A

11. Identify how you possess all necessary authority to undertake or participate in the project.
Twin Loups does not own the Davis Creek Dam but is legally responsible for all operations and maintenance activities, including associated financial obligations. Twin Loups is qualified, responsible, and legally capable of carrying out this project.

12. Identify the probable consequences (environmental and ecological) that may result if the project is or is not completed.

If the erosion issue remains unaddressed, eventually the dam embankment could be undermined and breached. This could release a large wave of floodwater downstream, carrying with it thousands of tons of sediment and debris. The health and safety of the public downstream of the dam would be threatened by the resultant flooding. Riparian areas would be scoured away, and upland floodplain areas would be choked by deposition of sediment and debris. Existing fish and wildlife habitat provided by the reservoir would be lost. Loss of the dam would also decrease groundwater recharge rates in the region.

Section C.

NRC SCORING

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

The following 15 criteria constitute the items for which points will be assigned. Point assignments will be 0 to 6 for items (1) - (9); and 0 to 3 for items (10) - (15). Two additional points will be awarded to projects which address issues determined by the NRC to be the result of a federal mandate.

Notes:

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

- There is a total of 72 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted above. Once points are assigned, they will be added to determine a final score. The scores will determine ranking.

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

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

1. Remediates or mitigates threats to drinking water;

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

   This project will ensure the continued safe operation of the Davis Creek Reservoir, which will benefit the regional aquifer and, in turn, the area's drinking water and groundwater irrigation supply. Davis Creek Reservoir is located on top

of a groundwater mound formed due to infiltration and seepage from a trio of irrigation reservoirs and their associated canal systems. These include Davis Creek Reservoir, Sherman Reservoir (10 miles southwest), and Calamus Reservoir (35 miles northwest). According to data from the University of Nebraska-Lincoln Conservation and Survey Division, the aquifer levels around the Davis Creek Reservoir have risen by as much as 40 feet since the construction of the dam (Figure 4). As a result, there is a more sustainable groundwater supply, benefiting hundreds of privately owned rural wells in the region, and municipal wells in nearby communities such as the Villages of North Loup and Scotia, among others. The majority of privately owned wells in this region are used for irrigation, domestic water supply, and livestock water supply. Enhanced groundwater irrigation is provided due to the elevated groundwater levels. This supplements surface water supplies from the canal system.

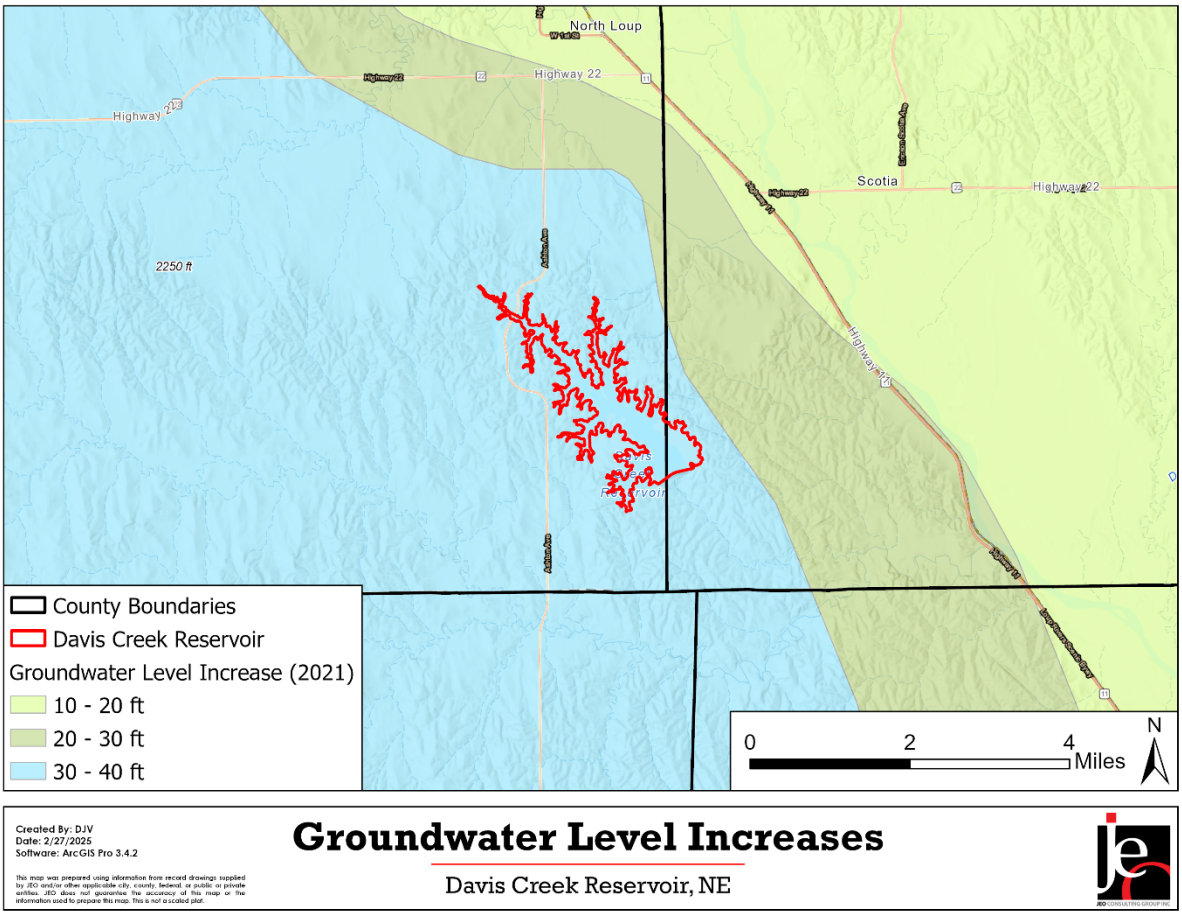

Figure 4: Groundwater Level Increases

2. Meets the goals and objectives of an approved integrated management plan or ground water management plan;

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

The Davis Creek Reservoir is owned by the Bureau of Reclamation and operated by Twin Loups. LLNRD is a project partner and has statutory responsibilities to protect and conserve natural resources within its jurisdiction. This project aligns with the goals of the LLNRD Integrated Management Plan (IMP) (published 2016). Goal 2 of the IMP is to “Implement this water management plan to maintain an efficient and economical balance between current and future water supplies and demands.” This proposed erosion protection project would help the LLNRD work towards this goal by maintaining the ability of the Davis Creek Reservoir to store water needed for irrigation and provide valuable recreation opportunities in the region.

The water stored in the Davis Creek Reservoir is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland (Figure 5).

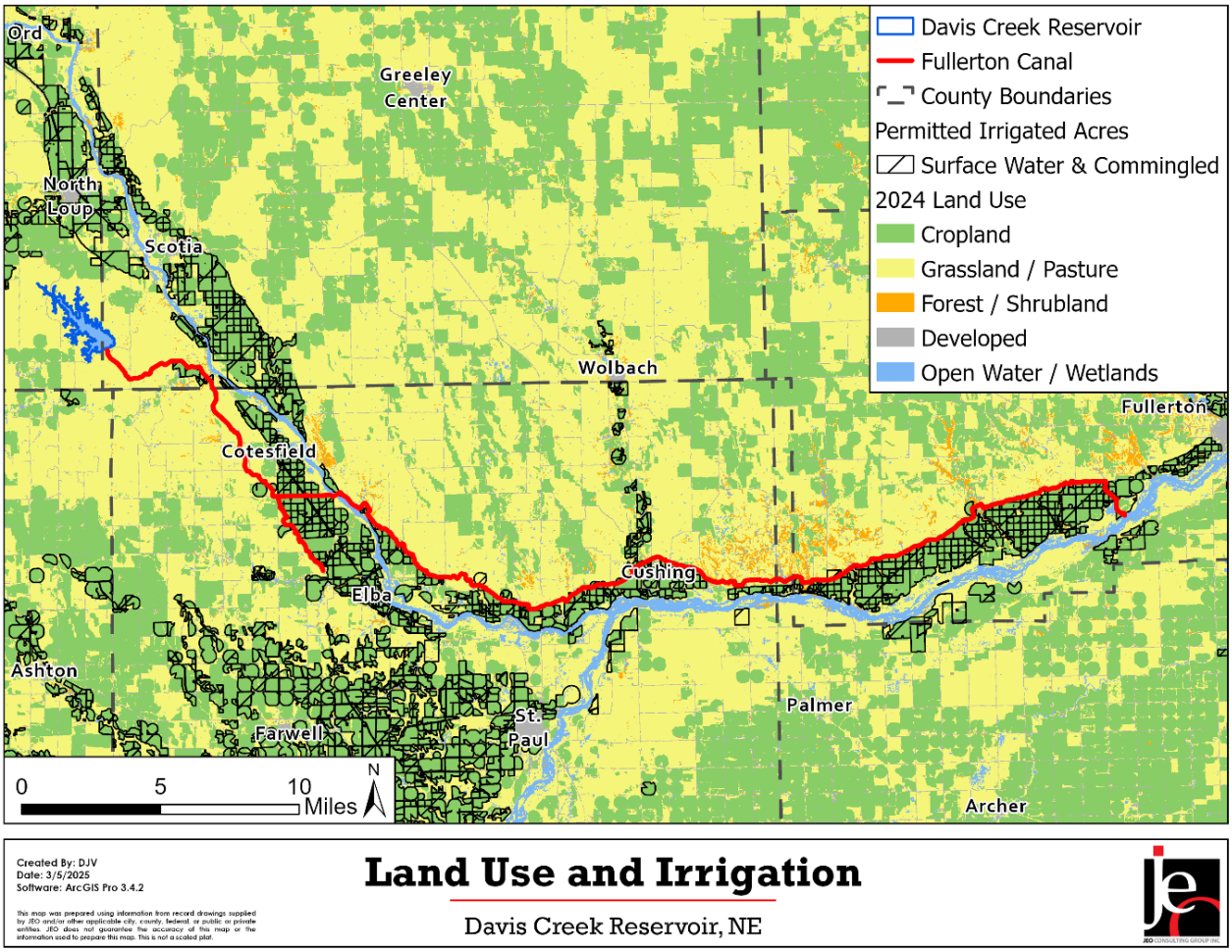

Figure 5: Land Use and Irrigation

According to the 2024 Nebraska Farm Real Estate Report, the average value of irrigated cropland in this region is $8,532 per acre. The average value of non-irrigated cropland (dryland) is $4,242 per acre. The irrigation capability provided by the Davis Creek Reservoir has collectively increased the real estate value of the 35,000 acres of farmland by approximately $150,000,000. The potential loss of this irrigation supply would be devastating to the local and regional economy.

Davis Creek Reservoir is also a popular recreation destination. Between 2022 and 2024, there were an average of 55,140 annual visitors to the reservoir, and 4,811 overnight campsite reservations. At a cost of $30 per night, this results in an average annual revenue of approximately $144,330 in campground fees.

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

   List the following information that is applicable:

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

When operated at the top of the active conservation pool elevation, the Davis Creek Reservoir has a pool area of approximately 1,145 acres and holds 31,158 acre-feet of water. Currently, the reservoir is operated at a lower elevation to minimize erosion caused by waves. After the project is implemented, the reservoir will be operated at its full pool elevation again, allowing for greater opportunities for groundwater recharge. According to information available from the United States Department of Agriculture, soils in the region surrounding the reservoir are primarily composed of well-drained silt loam of Hydrologic Soil Group B. Group B soils have moderate to high rates of infiltration and water transmission when saturated.

Based on seepage information reported by the US Bureau of Reclamation, when the Davis Creek Reservoir can be operated at its full pool volume after the implementation of this project, approximately 4,500 acre-feet of water will be recharged to the aquifer annually. Implementation of this project will ensure that groundwater recharge continues in this region, and aquifer depletion does not become an issue. As a result, there is a more sustainable groundwater supply, benefiting hundreds of privately owned rural wells in the region, and municipal wells in nearby communities such as the Villages of North Loup and Scotia, among others. The majority of privately owned wells in this region are used for irrigation, domestic water supply, and livestock water supply. There will be no increase in regular streamflow as releases from the dam are controlled for irrigation purposes.

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

- List the goals the project provides benefits.
- Describe how the project will provide these benefits
- Provide a long range forecast of the expected benefits this project could have versus continuing on current path.

The Davis Creek Reservoir provides water supply for several purposes, including agriculture, recreation, and fish / wildlife habitat. Implementation of this proposed erosion protection project would ensure Davis Creek Reservoir is able to continue supplying water for these purposes long into the future.

The Davis Creek Reservoir was originally constructed for use as an irrigation water storage and supply facility. The stored water is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. The potential loss of this irrigation supply would be devastating to the local and regional economy.

The Davis Creek Reservoir is part of a large Wildlife Management Area (WMA) that includes approximately 3,156 acres of land and water that is maintained for public access and recreation. Nebraska Game and Parks Commission (NGPC) manages the WMA to allow both native and migratory wildlife species to have a safe place to breed, rest, and feed. The reservoir is also managed as a fishery by NGPC. According to the NGPC 2023 Fishery Survey Summary, the reservoir has been stocked multiple times with fish species including walleye, wipers, gizzard shad, and channel catfish. The reservoir also supports populations of white bass and crappie.

Davis Creek Reservoir is a popular destination for anglers, boaters, and campers. LLNRD maintains recreation features in the area around the reservoir which include picnic shelters, campgrounds with electricity and water, a shower house, boat ramps, ADA accessible fishing access, a fish cleaning station, and a sanitary dumping station. Between 2022 and 2024, there were an average of 55,140 annual visitors to the reservoir, and 4,811 overnight campsite reservations.

Additionally, Davis Creek Reservoir is located on top of a groundwater mound formed due to infiltration and seepage from a trio of irrigation reservoirs and their associated canal systems. These include Davis Creek Reservoir, Sherman Reservoir (10 miles southwest), and Calamus Reservoir (35 miles northwest). According to data from the University of Nebraska-Lincoln Conservation and Survey Division, the aquifer levels around the Davis Creek Reservoir have risen by as much as 40 feet since the construction of the dam. As a result, there is a more sustainable groundwater supply for domestic use, benefiting hundreds of privately owned rural wells in the region, and municipal wells in nearby communities such as the Villages of North Loup and Scotia, among others. The majority of privately owned wells in this region are used for irrigation, domestic water supply, and livestock water supply.

The proposed project will ensure the Davis Creek Reservoir is able to continue providing the water needed for all these benefits for at least another 50 years. If the proposed project is not implemented, Twin Loups will be forced to operate the Davis Creek Reservoir at a reduced water capacity to minimize the ongoing erosion. The lower pool elevation provides approximately 10,000 fewer acre-feet of water than the designed full pool elevation. This greatly reduces the water available for the beneficial uses described above. If Twin Loups increases the water level to the designed full pool elevation, the rate of erosion will increase

until the dam embankment is eventually breached. Breaching of the dam embankment would destroy all the benefits described above. No water would be available for irritation, recreation, or fish and wildlife habitat. The resultant wave of floodwater and debris from a dam breach scenario would endanger public health and safety downstream of the dam, as well as scour away riparian areas and choke floodplain and upland areas with deposited sediment and debris.

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

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

   The Davis Creek Reservoir provides water for several beneficial uses, including agriculture, recreation, and fish / wildlife habitat. Implementation of this proposed erosion protection project would ensure Davis Creek Reservoir is able to continue providing water for these beneficial uses for at least another 50 years.

   The Davis Creek Reservoir was originally constructed for use as an irrigation water storage and supply facility. The stored water is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. The potential loss of this irrigation supply would be devastating to the local and regional economy.

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6. Is cost-effective;

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

Total project costs are estimated to be $388,600. These costs include design work, earthwork, shoreline armoring, administration work, bidding, construction oversight, and the acquisition of all relevant permits. A breakdown of cost distributions is included in the table below. Twin Loups is the sole project sponsor and is requesting 60% of the total costs from WSF ($233,160). The remaining costs will be covered by Twin Loups ($155,440). If the WSF funds are not obtained, Twin Loups will be forced to explore other potential funding sources.

The monetary benefits provided by the Davis Creek Reservoir are astronomical. The water stored in the Davis Creek Reservoir is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. According to the 2024 Nebraska Farm Real Estate Report, the average value of irrigated cropland in this region is $8,532 per acre. The average value of non-irrigated cropland (dryland) is $4,242 per acre. The irrigation capability provided by the Davis Creek Reservoir has collectively increased the real estate value of the 35,000 acres of farmland by approximately $150,000,000. The potential loss of this irrigation supply would be devastating to the local and regional economy.

Davis Creek Reservoir is also a popular recreation destination. Between 2022 and 2024, there were an average of 55,140 annual visitors to the reservoir, and

4,811 overnight campsite reservations. At a cost of $30 per night, this results in an average annual revenue of approximately $144,330 in campground fees.

Task	Requested from WSF	Twin Loups Funds	Total Cost
Mobilization	$11,400	$7,600	$19,000
Bonding and Insurance	$4,200	$2,800	$7,000
Site Grading	$6,000	$4,000	$10,000
Rock Riprap	$129,498	$86,332	$215,830
Geotextile Fabric	$8,430	$5,620	$14,050
Seeding, Fertilizer, and Mulch	$5,400	$3,600	$9,000
Construction Contingency	$41,232	$27,488	$68,720
Engineering Design and Permitting	$27,000	$18,000	$45,000
Total	**$233,160**	**$155,400**	**$388,600**

The table below provides a summary of the value of cost and benefit information associated with the project. The life of the project is estimated at 50 years. As discussed above, the benefits provided by the Davis Creek Reservoir are astronomical in comparison to the costs of this erosion protection project. Continued operation of the Davis Creek Reservoir is vital to the local and regional economy.

Action	Total Cost	Irrigated Farmland Valuation Increase	Annual Recreation Value	Benefit – Cost Ratio*
Erosion Prevention	$388,600	$150,000,000	$144,330	7.7

*Note: Benefit – Cost Ratio annualized over a 50-year lifespan.

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

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

The Platte River Recovery Implementation Program (PRRIP) is a federal agreement between Colorado, Wyoming, Nebraska, and the United States Department of the Interior with the goal of developing a shared management approach to maintain flows in the Platte River system that are vital for threatened

and endangered species. PRRIP is supported by local and national conservation groups, water users, Nebraska Game and Parks Commission, United States Bureau of Reclamation, and United States Fish and Wildlife Service, among others.

Water released from the Davis Creek Reservoir that is not used for irrigation returns to the North Loup River. The North Loup River is a tributary of the Loup River, which is in turn a tributary of the Platte River. Changes or restrictions in the amount of water held in, or released from, the Davis Creek Reservoir has the potential to alter in-stream flows in the Platte River system and violate PRRIP guidelines. Implementation of the proposed erosion protection project would ensure the Davis Creek Reservoir continues to play its role in Nebraska meeting the in-stream flow requirements of PRRIP.

Additionally, LLNRD was granted an Instream Flow Water Right on a portion of the Loup River with a priority date of 2017. The purpose of this Instream Flow Water Right is to preserve and protect fish habitat along the lower reaches of the Loup River. Water released from the Davis Creek Reservoir that is not used for irrigation helps to support this Instream Flow Water Right.

8. Reduces threats to property damage or protects critical infrastructure that consists of the physical assets, systems, and networks vital to the state or the United States such that their incapacitation would have a debilitating effect on public security or public health and safety;

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

This project would protect the Davis Creek Dam and Fullerton Canal, which are critical infrastructure. The water stored in the Davis Creek Reservoir is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. According to the 2024 Nebraska Farm Real Estate Report, the average value of irrigated cropland in this region is $8,532 per acre. The average value of non-irrigated cropland (dryland) is $4,242 per acre. The irrigation capability provided by the Davis Creek Reservoir has collectively increased the real estate value of the 35,000 acres of farmland by approximately $150,000,000. The potential loss of this irrigation supply would be devastating to the local and regional economy.

If the ongoing erosion issue remains unaddressed, eventually the dam embankment could be undermined and breached. This could release a large wave of floodwater downstream, carrying with it thousands of tons of sediment and debris. The health and safety of the public downstream of the dam would be threatened by the resultant flooding. Riparian areas would be scoured away, and upland floodplain areas would be choked by deposition of sediment and debris. Existing fish and wildlife habitat, as well as recreational opportunities provided by the reservoir, would be lost. Loss of the dam would also decrease groundwater recharge rates in the region.

9. Improves water quality;

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

Implementation of the proposed erosion prevention project would reduce the overall amount of sediment entering the Davis Creek Reservoir due to erosion. As shown in Figure 6, between 2020 and 2024 the shoreline eroded, on average, by about 20 feet laterally, and more than 50 feet in some locations. Since 1993, the shoreline has eroded, on average, by about 100 feet laterally, and as far as 200 feet in some locations. Preliminary investigations estimate that erosion of this particular portion of the shoreline has added an additional 20,000-30,000 cubic yards of sediment to the Davis Creek Reservoir.

Figure 6: Historic Shoreline Extents

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

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

    Twin Loups has sufficient funds and is committed to paying its 40% share of the project fees. Twin Loups is legally responsible for all operations and maintenance activities at the Davis Creek Reservoir, including associated financial obligations. The annual operating budget is approximately $3,900,000. This includes funds set aside for the operation and maintenance of the irrigation infrastructure they are responsible for, such as the Davis Creek Reservoir. Twin Loups generates income through the sale of irrigation water to agricultural producers downstream. Rates charged vary between $30-$32 per acre-foot of water delivered, which

generates the majority of their annual income. Twin Loups is qualified, responsible, and legally capable of carrying out this project.

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

- List the local jurisdiction and identify specific plans being referenced that are in place to support sustainable water use.
- Provide the history of work completed to achieve the goals of these plans.
- List which goals and objectives this project will provide benefits for and how this project supports or contributes to those plans.
- Describe and quantify how the project supports sustainable water use, what is the target area, what is the population or acreage receiving benefits, what is the usage of the water: residential, industrial, agriculture or recreational.
- List all stakeholders involved in project.
- Identify who benefits from this project.

The Davis Creek Reservoir is owned by the Bureau of Reclamation and operated by Twin Loups. The Lower Loup natural Resources District (LLNRD) is a project partner and has statutory responsibilities to protect and conserve natural resources within their jurisdiction. This project aligns with the goals of the LLNRD Integrated Management Plan (IMP) (published 2016). Goal 2 of the IMP is:

> "Implement this water management plan to maintain an efficient and economical balance between current and future water supplies and demands."

This proposed erosion protection project would help the LLNRD work towards this goal by maintaining the ability of the Davis Creek Reservoir to store water needed for irrigation and provide valuable recreation opportunities in the region. LLNRD would benefit from this project and has provided a letter of support (Attachment A).

The Davis Creek Reservoir is part of a large Wildlife Management Area (WMA) that includes approximately 3,156 acres of land and water that is maintained for public access and recreation. Davis Creek Reservoir is a popular destination for anglers, boaters, and campers. LLNRD maintains recreation features in the area around the reservoir which include picnic shelters, campgrounds with electricity and water, a shower house, boat ramps, ADA accessible fishing access, a fish cleaning station, and a sanitary dumping station. Between 2022 and 2024, there were an average of 55,140 annual visitors to the reservoir, and 4,811 overnight campsite reservations. Implementation of this proposed erosion protection project would ensure the recreational aspects of the Davis Creek Reservoir can be enjoyed by Nebraska residents long into the future.

The Davis Creek Reservoir was originally constructed for use as an irrigation water storage and supply facility. The stored water is released into the Fullerton

Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. The potential loss of this irrigation supply would be devastating to the local and regional economy. Implementation of this erosion protection project would ensure the irrigation water supplied by the Davis Creek Reservoir would remain available into the future.

Additionally, LLNRD was granted an Instream Flow Water Right on a portion of the Loup River with a priority date of 2017. The purpose of this Instream Flow Water Right is to preserve and protect fish habitat along the lower reaches of the Loup River. Water released from the Davis Creek Reservoir that is not used for irrigation helps to support this Instream Flow Water Right.

12. Addresses a statewide problem or issue;

- List the issues or problems addressed by the project and why they should be considered statewide.
- Describe how the project will address each issue and/or problem.
- Describe the total number of people and/or total number of acres that would receive benefits.
- Identify the benefit, to the state, this project would provide.

This project will allow the Davis Creek Reservoir to continue supplying recreation opportunities, groundwater recharge, and irrigation water supply. All of these are statewide issues in Nebraska.

Recreation: Less than 3% of land in Nebraska is publicly accessible for recreation purposes. The Davis Creek Reservoir is part of a large Wildlife Management Area that includes approximately 3,156 acres of land and water that is maintained for public access and recreation. LLNRD maintains recreation features in the area around the reservoir which include picnic shelters, campgrounds with electricity and water, a shower house, boat ramps, ADA accessible fishing access, a fish cleaning station, and a sanitary dumping station. Between 2022 and 2024, there were an average of 55,140 annual visitors to the reservoir, and 4,811 overnight campsite reservations. Implementation of this proposed erosion protection project would ensure the recreational aspects of the Davis Creek Reservoir can be enjoyed by Nebraska residents long into the future.

Groundwater Recharge: According to information available from the United States Department of Agriculture, soils in the region surrounding the reservoir are primarily composed of well drained silt loam of Hydrologic Soil Group B. Group B soils have moderate to high rates of infiltration and water transmission when saturated. Based on information available from University of Nebraska-Lincoln Conservation and Survey Division, the aquifer in the region surrounding the

Davis Creek Reservoir has risen by as much as 40 feet since the dam was constructed. Increased groundwater recharge benefits thousands of residents in the area that rely on groundwater for municipal, residential, and agricultural purposes.

Irrigation Supply: The Davis Creek Reservoir was originally constructed for use as an irrigation water storage and supply facility. The stored water is released into the Fullerton Canal. The Fullerton Canal supplies water to 88 producers downstream who collectively operate 295 canal turnouts and irrigate more than 35,000 acres of productive farmland. The potential loss of this irrigation supply would be devastating to the local and regional economy. Implementation of this erosion protection project would ensure the irrigation water supplied by the Davis Creek Reservoir would remain available into the future.

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

- List other funding sources or other partners, and the amount each will contribute, in a funding matrix.
- Describe how each source of funding is made available if the project is funded.
- Provide a copy or evidence of each commitment, for each separate source, of match dollars and funding partners.
- Describe how you will proceed if other funding sources do not come through.

There are no additional funding sources for this project beyond Twin Loups and WSF. Twin Loups' goal is to leverage their own funds alongside State of Nebraska funds for the overall good of Nebraska residents. Twin Loups has sufficient funds and is committed to paying its 40% share of the project fees. Twin Loups is legally responsible for all operations and maintenance activities at the Davis Creek Reservoir, including associated financial obligations. The annual operating budget is approximately $3,900,000. This includes funds set aside for the operation and maintenance of the irrigation infrastructure they are responsible for, such as the Davis Creek Reservoir. Twin Loups generates income through the sale of irrigation water to agricultural producers downstream. Rates charged vary between $30-$32 per acre-foot of water delivered, which generates the majority of their annual income. Twin Loups is qualified, responsible, and legally capable of carrying out this project.

14. Contributes to watershed health and function;

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

The proposed erosion protection improvements to the Davis Creek reservoir would work to maintain the watershed's health and function. If the erosion issue remains unaddressed, eventually the dam embankment could be undermined and breached. This could release a large wave of floodwater downstream, carrying with it thousands of tons of sediment and debris. Riparian areas would be scoured away, and upland floodplain areas would be choked by deposition of sediment and debris. Protection of these resources through the continued maintenance of the dam in good working condition would help to protect the health and function of the watershed.

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

- Identify the date of the Annual Report utilized.
- List any and all objectives of the Annual Report intended to be met by the project
- Explain how the project meets each objective.

This project would satisfy Goal Five as identified in the 2024 Annual Report:

> "Protect existing water uses through collaborative investments in water resources projects, planning, administration, and permitting of surface water rights, and the registration of groundwater wells."

This project would protect the existing water uses provided by the Davis Creek Reservoir through completion of a water resources project. The reservoir supports a variety of water uses including irrigation, recreation, and fish habitat. Implementation of the erosion protection measures needed at the Davis Creek Reservoir would ensure these water uses will continue to be viable into the future.

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

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

This project supports the mission of the Bureau of Reclamation. Their mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. The Davis Creek Reservoir was constructed by, and is owned by, the Bureau of Reclamation. Twin Loups operates the reservoir under a long-term lease. As this project works to maintain the functional condition of a Bureau of Reclamation structure, while also maintaining the responsible usage and

management of Nebraska’s water resources, the project both meets federal mandates and further the goals of the WSF.