APPLICATION PREPARED BY:

LOWER PLATTE SOUTH natural resources district

HOUSTON engineering, inc.

Water Sustainability Fund Application

Pecan Creek Wetland Complex

March 31, 2025

COVER LETTER

APPLICATION

SUPPLEMENTAL INFORMATION ATTACHMENT

BIBLIOGRAPHY

COVER LETTER

PAPIO MISSOURI RIVER NATURAL RESOURCES DISTRICT

HOUSTON engineering, inc.

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March 31, 2025

Mr. Jesse Bradley
Director, Nebraska Department of Natural Resources
via Electronic Submission

Re: Pecan Creek Wetland Complex, Application for Water Sustainability Fund Grant

Director Bradley and Members of Natural Resources Commission:

In accordance with the rules, regulations and guidelines for Nebraska's Water Sustainability Fund Grant Program, please accept this grant application on behalf of the Lower Platte South Natural Resources District (LPSNRD) for the above-referenced project. A unique opportunity was recognized by project partners to develop an urban stormwater quality improvement project on University of Nebraska-Lincoln East Campus (UNL EC) property. Undeveloped land in an urbanized watershed is limited and this location on UNL EC will also provide educational and community outreach opportunities should the project be implemented while the land is still available.

In addition to the Application posted on the NDNR website, there is also an attachment referenced as the Supplemental Information Attachment (SIA). The goal of this application structure was to first provide reviewers with the information required to concisely answer the questions in the official Application, second to provide additional maps and supporting documents to address the required information in the Application, and third to provide source information to documents that were referenced in the Application. We trust that this allows you to quickly review the information you desire and gather additional data as each individual reviewer sees fit.

"Water Sustainability" is defined in Nebraska Title 264 as *when water use is sustainable when current use promotes healthy watersheds, improves water quality, and protects the ability of future generations to meet their needs.*

Recognizably, sustainability has varied meanings across the State. In urbanized Eastern Nebraska, watershed health and improvements to water quality are primary needs. This project will provide these benefits to a community that is one of the greatest contributors to the State's economy. We thank you for your acceptance of this application and stand ready to provide clarification on any information provided during your review.

Sincerely,

David Potter
Assistant General Manager, LPSNRD

APPLICATION

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NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: Pecan Creek Wetland Complex

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

Sponsor Business Name: Lower Platte South Natural Resources District

Sponsor Contact's Name: David Potter

Sponsor Contact's Address: 3125 Portia Street Lincoln, NE 68521

Sponsor Contact's Phone: (402) 476-2729

Sponsor Contact's Email: dpotter@lpsnrd.org

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

   Grant amount requested. $ 699,200

   - 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. Click here to enter text.
- What is the population served by your project? Click here to enter text.
- Provide a demonstration of need. Click here to enter text.
- **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☒

Final design and permitting is anticipated to occur from 2025 through 2026. At that time, the required permits for this Project will be obtained. Consultation for Section 7 of the Endangered Species Act with USFWS and NGPC Threatened and Endangered Species consultation will be conducted prior to any work. A cultural resources evaluation will be conducted for the Project and consultation with SHPO and potentially impacted Tribes will be completed. A Section 404 permit will be obtained through the US Army Corps of Engineers (USACE) prior to construction. The estimated cost to obtain the permits is estimated to be $35,000 is included in the engineering costs below.

Summary of Costs

Task	Cost
Construction	$ 801,630
Engineering, Permitting, and Construction Oversight	$ 228,110
Monitoring Equipment	$ 168,300
Land Rights	$ -
Project Administration	$ 50,000
Total Costs	**$ 1,248,040**

4. Partnerships

List each Partner / Co-sponsor, attach documentation of agreement:

- Lower Platte South Natural Resources District (LPSNRD)
- City of Lincoln
- University of Nebraska – Lincoln (UNL)
- Lincoln Public Schools (LPS)
- Omaha Public Schools (OPS)

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

LPSNRD is the Project sponsor and is responsible for contracting for funding, planning, design, and construction. They are also responsible for leading coordination meetings with the other Partners and coordinating community outreach.

City of Lincoln is a project and funding partner and participates in coordination meetings to provide input and ensure consistency in city planning.

University of Nebraska – Lincoln (UNL) is a project partner and will lead the research effort once the Project is constructed. They participate in coordination meetings to ensure the wetlands are built to both provide water quality benefits and research and educational opportunities for students, faculty, and the community. They will lead coordination with programs at an on-site education center with LPS and OPS after the Project is complete.

Lincoln Public Schools is a project supporter and has an agreement with UNL to engage students at an on-site education center after the Project is complete.

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.

No other sources of funding are being pursued to support the implementation of this project. The funding summary breakdown in provided below.

Funding Breakdown

Pecan Creek Wetland Complex	Total Costs	Spent/ Ineligible	Eligible WSF Costs	STATE WSF Grant Request	LOCAL Total Local Cost Share
Construction	$ 801,630	--	$ 801,630	$ 335,500	$ 466,130
Engineering, Permitting, and Construction Oversight	$ 228,110	$ 82,710	$ 145,400	$ 145,400	$ -
Monitoring Equipment	$ 168,300	--	$ 168,300	$ 168,300	$ -
Land Rights	--	--	--	--	$ -
Project Administration	$ 50,000	--	$ 50,000	$ 50,000	$ -
Totals	**$ 1,248,040**	**$ 82,710**	**$ 1,165,330**	**$ 699,200**	**$ 466,130**

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 Project occurs within the city of Lincoln (Lancaster County), north of Holdrege Street and west of N. 48th Street, adjacent to Pecan Creek (see Figure A-1 in the SIA). The Project purpose is to establish a wetland complex to provide water quality improvements and ecological benefits as well as a research area on the UNL East Campus (EC). The Project draws inspiration from the successful model of the Wilma H. Schiermeier Olentangy River Wetland Research Park at Ohio State University. The future vision is to establish a premier urban wetland and stormwater runoff ecosystem innovation, research, and discovery center dedicated to advancing knowledge and promoting the conservation of wetlands and associated habitats in the Great Plains region. Research will focus on urban water quality and quantity examining how the built environment can better manage runoff through conservation and good management practices for a thriving urban center with a high quality of living.

The primary goals of the Project are to restore and sustain the ecological integrity of a new wetland complex in conjunction with Pecan Creek and to improve the water quality of Pecan Creek – the water leaving the UNL EC will be of better quality then when it flowed into campus. This will be attained by transforming the diversity and resilience of the living organisms through ecological restoration and ensuring sustained gains are made through the restoration efforts. Objectives of the Project include prioritizing plant species and habitat creation, developing a long-term monitoring plan to track vegetation establishment, water quality, and wildlife populations, establishing adaptive management strategies, and engaging students, faculty, and community members in ongoing monitoring and maintenance. Future goals and objectives will encompass specific research

projects and publications, providing enriching learning opportunities for students, and developing and implementing immersive community outreach programs.

Components of this phase of the Project include construction of the complex and installation of monitoring equipment. Four wetland cells will be excavated adjacent to Pecan Creek, on the UNL EC property. Excavated soil will be used as fill material to create a building pad and rough-in road grades. Roadway grading will occur for a future, possible connection of N. 48th Street to the UNL EC, providing access to the wetlands, parking, and the building pad. During this phase of the Project, only the earthwork will be completed on UNL property for the road and the area planted with a native seed mix. Roadway surface will be added during a future phase of the project. Three 7' x 7' culverts will be installed on Pecan Creek to facilitate the roadway embankment. These were sized to ensure no induced flooding would occur upstream. A diversion structure will be constructed in conjunction with the culvert to divert water from Pecan Creek into the wetland cells and water control structures will be installed to connect wetland cells within the treatment train/wetland complex. It is anticipated that the water will gravity flow from Pecan Creek, through each of the four wetland cells, and back to Pecan Creek. A trash trap will be placed on Pecan Creek upstream of the wetlands.

An access path will be graded to allow for access from the parking lot to and around each wetland cell. A building pad will be constructed to allow for placement of a donated trailer that will be used as an educational center. It is anticipated that a more permanent structure will be placed during a future phase of the Project.

Monitoring equipment will be installed to monitor water quality and quantity (see Figure A-2 in the SIA). Two flowmeters will be installed on Pecan Creek near Holdridge and N. 48th Street as the stream enters UNL's East Campus. A third flow meter will be installed at the weir on Pecan Creek right before the stream flows into Deadman's Run. A fourth flow meter will be installed on Deadman's Run upstream of the confluence with Pecan Creek. ISCO samplers will be installed at four locations to allow for water quality sampling during storm events. Two will be installed on Pecan Creek, one at Holdridge and N. 48th Street, and one at the weir. These will be upstream and downstream of the wetlands. Two will also be installed on Deadman's Run, one upstream near the flow meter and one downstream at the USGS gage station. Conductivity sensors and dissolved oxygen sensors will be installed at each of the ISCO sampler locations. Four cameras to monitor and document the creation of the wetlands will be installed. Platte Basin Timelapse will periodically download the images and obtain aerial video with a drone. They will create videos illustrating the story and changes that occur due to the wetlands.

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.

Construction: all material and labor costs to construct the wetland, roadway, culvert, building pad and parking lot pad.

Engineering, Permitting, and Construction Oversight: final modeling and design of the project components, surveys, permitting services, and construction observation. Engineering costs are based on engineering judgement and similar projects within the state.

Land Rights: no costs are included for land rights.

Monitoring Equipment: Costs associated with the initial purchase of monitoring equipment.

Project Administration: includes equipment installations, project oversight and review, contract administration and supervision.

Annual Cost Breakdown

Project Task	Year 1 (2025)	Year 2 (2026)	Year 3 (2027)	Remaining	Total Amount
Construction		$ 480,980	$ 320,650	$ -	**$ 801,630**
Engineering, Permitting, and Construction Oversight	$ 136,870	$ 68,430	$ 22,810	$ -	**$ 228,110**
Monitoring Equipment	$ 50,490	$ 117,810	$ -	$ -	**$ 168,300**
Land Rights	$ -	$ -	$ -	$ -	**$ -**
Project Administration	$ 15,000	$ 20,000	$ 15,000	$ -	**$ 50,000**
Totals	**$ 202,360**	**$ 687,220**	**$ 358,460**	**$ -**	**$ 1,248,040**

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;

Engineers, scientists, planners, and faculty employed and contracted by the project Sponsors and Partners have developed the project purpose, scope, objectives. In addition, a preliminary design has been developed utilizing technical analyses, field observations, and professional judgement. The multi-disciplined team of Partners has ensured that the Project will be designed and constructed to meet the Project goals and that the vision of the Project can be met through attainable operations and maintenance.

Watershed modeling and a water balance analysis have been completed for the Project. A 2-dimensional HEC-RAS model was utilized to determine flow rates for 10- to 100-year flow rates and inundation extents along Pecan Creek. This information was used to size culverts for the proposed road off N. 48th Street on UNL EC and to identify a preliminary design for the diversion structure. The wetland cell size was refined based on estimated streamflow from Pecan Creek, determined using the watershed ratio method with historical gage data from Deadman's Run. Seepage rates were conservatively estimated using surface soil composition, while evapotranspiration was derived from a UNL study on Nebraska's climate data. Precipitation estimates came from a nearby historical gage. These inputs, along with their uncertainties, were incorporated into a Monte Carlo simulation that iteratively adjusted wetland cell volume until a 7-day saturation period was consistently achieved during non-winter months. These studies have shown that there will be adequate water supply and will not induce flooding impacts upstream of the Project.

The data and analyses were used to conduct an alternatives evaluation of potential wetland cell locations and potential diversion types and locations. A preliminary design has been developed for the wetland cells to ensure positive drainage, adequate sizing, and functionality. A Strategic Plan for the complex

developed by the Partners helped to determine appropriate monitoring equipment. These were used to estimate quantities and Project costs.

1.A.2 Describe the plan of development (004.01 A);

Meetings between the Project Sponsor (LPSNRD) and two of the Project partners (City of Lincoln, UNL) identified the need for water quality improvements, ecosystem restoration, research opportunities, and community engagement. These entities share a common interest in enhancing the watershed and community through meaningful, lasting projects. Another project occurring on the UNL EC and sponsored by LPSNRD and the City of Lincoln (Deadman's Run flood resiliency project) provided an opportunity to reduce construction costs through efficient use of equipment and workforce.

Coordination meetings and roundtable discussions helped to develop the Project scope and required technical analysis and field observations. On-site investigations commenced to collect visual observations and gain an understanding of the site-specific needs. Potential locations for a diversion from Pecan Creek and wetland cell locations were identified during field investigations. An Environmental Review, including a stream and wetland delineation, was conducted in 2024.

Watershed modeling and a water balance analysis evaluated water supply and potential constraints. An alternatives evaluation assessed potential wetland complex layouts for technical feasibility, cost effectiveness, potential water quality benefits, future research and education opportunities, and limiting impacts to existing environmental resources. Some of these alternatives included on-line wetland cells and varying cell numbers and sizes. A preferred alternative was identified and conceptual level design and cost estimates were determined.

1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B);

On-site investigations were conducted by the Sponsor and Houston Engineering, Inc. to collect visual observations and gain an understanding of the site-specific needs. Potential locations for a diversion from Pecan Creek and wetland cell locations were identified during field investigations. An Environmental Review, including a stream and wetland delineation, was conducted in 2024.

1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C);

A wetland concept map has been inserted into the SIA as Figure B-1.

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 will be impacted by this Project. The Project components will be constructed and placed within UNL-owned property. The roadway will tie into N. 48th Street within the City of Lincoln right-of-way. UNL is a Project partner and will retain ownership of the land. No land rights will be needed.

1.A.6 Discuss each component of the final plan (004.01 E);

The final plan includes a combination of the following components (Figure B-1 in the SIA):

Wetland Cells: Four wetland cells will be excavated adjacent to Pecan Creek, on the UNL East Campus property. Elevations will be designed to coincide with the diversion structure placed within Pecan Creek and will grade from the upland down to the wetland at a 3:1 slope. An access ramp with a 5% slope was designed to traverse down to the wetland for pedestrian and small motorized vehicle access.

Roadway Grading and Culverts: Earthen roadway grading will occur, providing a future possible connection to N. 48th Street from the UNL East Campus, to provide access to the wetlands, parking, and the building pad. During this phase of the Project, only the earthwork will be completed on UNL property and the area planted with native seeds. Roadway surface will be added during a future phase of the project. Three 7' x 7' culverts will be installed on Pecan Creek to facilitate the roadway embankment. These were sized to ensure no induced flooding would occur upstream.

Diversion Structure: A diversion structure will be constructed in conjunction with the culvert to divert water from Pecan Creek into the wetland cells.

Water Control Structures: Water control structures will be installed to connect wetland cells within the treatment train/wetland complex. It is anticipated that the water will gravity flow from Pecan Creek, through each of the four wetland cells, and back to Pecan Creek.

Access Path: An access path will be graded to allow for access from the parking lot to and around each wetland cell.

Building Pad: A building pad will be constructed to allow for placement of a donated trailer that will be used as an educational center. It is anticipated that a more permanent structure will be placed during a future phase of the Project.

Parking Lot Pad: A parking lot pad will be constructed to provide space for student, faculty, and visitor parking.

Monitoring Equipment: Monitoring equipment will be installed to monitor flows and water quality. Two flowmeters will be installed on Pecan Creek near Holdridge and N. 48th Street as the stream enters UNL's East Campus. It is a double box culvert so one flowmeter is required for each culvert. A third flow meter will be installed at the weir on Pecan Creek right before the stream flows into Deadman's Run. A fourth flow meter will be installed on Deadman's Run upstream of the confluence of Pecan Creek.

ISCO samplers will be installed at four locations to allow for sampling during storm events. Two will be installed on Pecan Creek, one at Holdridge and N. 48th Street, and one at the weir. These will be upstream and downstream of the wetlands. Two ISCO samplers will be installed on Deadman's Run, one upstream near the flow meters and one downstream at the USGS gage station. Conductivity sensors and dissolved oxygen sensors will be installed at each of the ISCO sampler locations.

Four cameras to monitor and document the creation of the wetlands will be installed. Platte Basin Timelapse will periodically download the images and obtain aerial video with a drone. They will create videos illustrating the story and changes that occur due to the wetlands.

Trash Trap: A trash trap will be placed on Pecan Creek upstream of the wetlands to trap trash from the urban watershed and prevent the trash from entering the wetlands. Trash will be collected after each large storm event.

1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1);

A geologic investigation will not be required for the Project. If any is required, costs would be covered under project engineering.

1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2);

Watershed modeling and a water balance analysis have been completed for the Project. A 2-dimensional HEC-RAS model was utilized to determine flow rates for 10- to 100-year flow rates and inundation extents along Pecan Creek. This information was used to size culverts for the proposed future road off N. 48th Street on UNL EC and to identify a preliminary design for the diversion structure. The wetland cell size was refined based on estimated streamflow from Pecan Creek, determined using the watershed ratio method with historical gage data from Deadman's Run. Seepage rates were conservatively estimated using surface soil composition, while evapotranspiration was derived from a UNL study on Nebraska's climate data. Precipitation estimates came from a nearby historical gage. These inputs, along with their uncertainties, were incorporated into a Monte Carlo simulation that iteratively adjusted wetland cell volume until a

7-day saturation period was consistently achieved during non-winter months. These studies have shown that there will be adequate water supply and will not induce flooding impacts upstream of the Project.

The data and analyses were used to conduct an alternatives evaluation of potential wetland cell locations and potential diversion types and locations. A preliminary design has been developed for the wetland cells to ensure positive drainage, adequate sizing, and functionality. A Strategic Plan for the complex developed by the Partners helped to determine appropriate monitoring equipment. These were used to estimate quantities and Project costs.

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).

Detailed survey will be required during final design, as well finalizing the hydraulics and hydrology. The size and configuration of the proposed cells, roadway, culvert, and diversion are subject to change based on the findings during final design.

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.

There are no other opportunities within the urban watershed on land that is not developed and owned by one of the Project partners. Education and outreach opportunities are available to promote water quality improvement practices on

private lands, but the Partners do not have control over implementation of these voluntary practices. The location of this project is on the downstream end of the drainage area that allows regional treatment of flows throughout the entire watershed. UNL ownership allows this site to be embodied by educational opportunities. This is a unique opportunity in an ideal location that cannot be achieved by other projects within the same watershed.

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).

   Construction costs were developed based on preliminary design quantities and apply the most current commodity prices based on recent/relative construction bid tabs. Engineering costs were estimated to account for expected design, permitting and construction oversight. Monitoring equipment costs were developed based on priorities for the Partners to fully understand the impact of the project on local water quality. With no land rights costs, the remaining costs are associated with project administration required to orchestrate Project implementation.

   Benefits for this Project are mostly intangible, meaning that these benefits cannot be expressed in monetary terms because of the difficulty in annualizing benefits due to the nature of benefits. This application focuses on the intangible benefits and includes costs associated with benefits that are known.

   The benefits from this Project can be organized into ecosystem services, as defined in the United States Department of Agriculture (USDA) in Design Manual 9500-013 (DM 95-00-013). These are described below and associated benefits from this Project that fall under each type of ecosystem service. Benefits are described further in Section 3.B below.

Project Ecosystem Services

Ecosystem Services	Project Benefits
Provisioning services: tangible goods provided for direct human use and consumption, such as food, fiber, water, timber, or biomass.	Freshwater Supply
	Genetic Resources
Regulating services: maintain a world in which it is possible for people to live, providing critical benefits that buffer against environmental catastrophe – examples include flood and disease control, water filtration, climate stabilization, or crop pollination.	Water Quality Improvements
	Pollinator Habitat
Supporting services: refer to the underlying processes maintaining conditions for life on Earth, including nutrient cycling, soil formation, and primary production.	Wetland Creation
	Improved Public Health
Cultural services: make the world a place in which people want to live – recreational use, spiritual, aesthetic viewsheds, or tribal values.	Community Engagement
	Education Center and Activities
	Research Opportunities
	Ecosystem Restoration

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).

A summary of all initial capital costs related to the Project are presented in the table below, and a more detailed breakdown of the construction and monitoring equipment costs are provided in the SIA Table B-1 and B-2. The Project life is estimated at 15-years (per NRCS practice code 658 for wetland creation), although many components of the project are designed to last longer than 15 years. Annual operation and maintenance costs were assumed to be 0.75% of construction costs calculated over 15 years.

Cost Summary

Summary of Capital Costs	
Construction	$ 801,630
Engineering, Permitting, and Construction Oversight	$ 228,110
Monitoring Equipment	$ 168,300
Land Rights	$ -
Project Administration	$ 50,000
Total Costs	**$ 1,248,040**

	Annual Cost	Lifetime (yrs)	Total
Operation and Maintenance	$ 6,010	15	$ 90,150

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).

Benefits for this Project are intangible, meaning that the benefits cannot be expressed in monetary terms because of the difficulty in annualizing benefits due to the nature of benefits. It is difficult to predict the year and costs of the received benefits from this Project due to the types of benefits.

Provisioning Services:

Freshwater Supply: This Project will develop urban wetlands that will purify water by trapping and absorbing nutrients, bacteria, and pollutants before they reach Deadman's Run.

Genetic Resources: The wetlands will provide habitat for diverse plant, animal, and microorganism species that can contribute to agriculture and conservation. Wetlands are crucial for maintaining genetic diversity, especially in urban environments. Protecting these genetic resources ensure that ecosystems remain resilient.

Regulating Services:

Water Quality Improvements: Water quality will be improved by removing sediment, pollutants, and excess nutrients. Wetland plants, soils, and microorganisms will trap and break down excess nutrients, bacteria, and other pollutants improving water quality within Pecan Creek and downstream within Deadman's Run.

Pollinator Habitat: Wetlands provide essential habitat and resources for pollinators, which play a crucial role in fertilizing plants and supporting agriculture. Providing pollinator habitat within an urban environment will help to maintain and provide critical benefits for a sustainable ecosystem.

Supporting Services:

Wetland Creation: Urban wetland creation provides essential supporting services by enhancing biodiversity, improving ecological processes, and sustaining other ecosystem functions. This Project will help the City of Lincoln adapt to climate change, restore lost habitats, and support wildlife and human well-being.

Improved Public Health: Urban wetlands provide multiple public health benefits, contributing to physical, mental, and environmental well-being. As supporting ecosystem services, they help create healthier urban environments by improving water quality and improving mental well-being by providing access to green space.

Cultural Services:

Community Engagement: Urban wetlands serve as important cultural ecosystem services by fostering community engagement, education, and recreation. These spaces create opportunities for people to connect with nature, participate in conservation efforts, and build stronger social ties.

Education Center and Activities: The Project will serve as an outdoor classroom, allowing schools and community groups to engage in hands-on learning about ecology, wildlife, and water conservation.

Research Opportunities: This Project will provide valuable research opportunities for students and faculty at UNL. The wetland complex will act as living laboratories where they can study environmental processes, conservation strategies, water quantity, and water quality and pollution monitoring.

Ecosystem Restoration: Construction of the Project is not just an ecological effort—it is also a cultural service that promotes environmental stewardship and enhances public engagement. Restoration projects provide opportunities for people to connect with nature, learn about conservation, and take part in rebuilding ecosystems that benefit both wildlife and society.

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).

No annual cash flow is required due to the non-monetary benefits from the Project.

Annual Cost Breakdown

Project Task	Year 1 (2025)	Year 2 (2026)	Year 3 (2027)	Remaining	Total Amount
Construction		$ 480,980	$ 320,650	$ -	**$ 801,630**
Engineering, Permitting, and Construction Oversight	$ 136,870	$ 68,430	$ 22,810	$ -	**$ 228,110**
Monitoring Equipment	$ 50,490	$ 117,810	$ -	$ -	**$ 168,300**
Land Rights	$ -	$ -	$ -	$ -	**$ -**
Project Administration	$ 15,000	$ 20,000	$ 15,000	$ -	**$ 50,000**
Totals	**$ 202,360**	**$ 687,220**	**$ 358,460**	**$ -**	**$ 1,248,040**

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.)

The Project will increase water sustainability but the majority of benefits from this Project are intangible. These benefits are largely intangible due to their inability to be expressed in monetary terms due to the nature of benefits and difficulty in assigning costs and annualizing benefits. This application focuses on the intangible benefits. To demonstrate economic feasibility, the benefits are described qualitatively in Section B-3(b) in this application. When available, quantitative values were given to describe the benefits from this Project.

Detailed analysis was performed to identify possible wetland cell layouts, operations and maintenance, and water supply.

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.

   The LPSNRD and City of Lincoln have planned and accounted for this Project, in conjunction with the Deadman's Run flood resiliency project, in their current budget and the stormwater bond passed by the City of Lincoln. Updates and adjustments to the project budget will be accounted for in the upcoming FY 2026 fiscal budget determination.

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

   LPSNRD and the City of Lincoln have included the project within their budgets and have sufficient revenue to repay the reimbursable costs of the Project. UNL has a signed agreement with LPSNRD for all operation and maintenance of the wetlands once the Project is constructed.

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

   A loan is not involved.

7. Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.).

   On-site investigations were conducted to collect visual observations and gain an understanding of the site-specific needs. Potential locations for a diversion from Pecan Creek and wetland cell locations were identified during field investigations. An Environmental Review, including a stream and wetland delineation, was conducted in 2024. The wetland complex and roadway embankment were

designed and placed to avoid existing wetlands and minimize impacts to Pecan Creek. The existing riparian buffer along Pecan Creek will remain. The creation of four wetland cells and their associated habitat for plants, animals, and microorganisms will ensure the Project provides an overall functional lift.

Impacts to threatened and endangered species will be avoided by consulting with NGPC and the USFWS when necessary and implementing conservation measures to protect any identified species of concern.

An NPDES permit for disturbed acres will be obtained, and a Stormwater Pollution Prevention Plan (SWPPP) will be developed to ensure minimal sediment transport from the site to the adjacent waterway.

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

The LPSNRD is a regional government agency that focuses on conserving, sustaining, and improving natural resources and the environment. This Project aligns with the types of projects that align with LPSNRD's roles and have a history of successful implementation, operation, and maintenance. Property is provided by UNL. All permits will be acquired to ensure all legal facets of the Project have been covered.

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

Neb. Rev. Stat. §2-1506 describes the Water Sustainability Fund goals. This Project fulfills multiple goals stated below:

- *Promote the goals and objectives of approved integrated management plans or groundwater management plans.*
- *Contribute to multiple water supply management goals including flood control, reducing threats to property damage, agricultural uses, municipal and industrial uses, recreational benefits, wildlife habitat, conservation, and preservation of water resources.*
- *Provide increased water productivity and enhance water quality.*

<u>Promote Goals and Objectives of approved IMPs</u>
The three goals in the 2014 Voluntary Integrated Management Plan (IMP) are to (1) ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands, (2) to achieve a sustainable water supply and to manage the supply and make it available whenever and wherever needed, and (3) to support water use and conservation that optimizes benefits.

This Project will help promote goals (1) and (3) of the IMP. Goal (1) is to ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands. Some objectives within this goal include evaluating variations in water inventory due to short-and long-term climate trends, to develop a more comprehensive water inventory, and to project changes to water inventory due to urban growth. Research and data collection will be ongoing once the Project is constructed. Flowmeters upstream and downstream of the wetland complex on Pecan Creek as well as on Deadman's Run upstream and downstream of the confluence with Pecan Creek will provide valuable water quantity information and benefit the goal of sufficient water supply data. Water quality samplers will also be installed on Pecan Creek and Deadman's Run. There will be a long-term evaluation and monitoring plan, providing valuable information on water quality at these locations within the District.

IMP goal (3) is to support water use and conservation that optimizes benefits. Some objectives of this goal include determining best available irrigation technologies, evaluating potential benefits of capturing and reusing stormwater, and expanding public education programs with the goals of increasing general awareness of water availability issues and benefits of conservation practices. This Project will provide a dedicated space for urban wetland creation and education. Research opportunities will be available for students and faculty to evaluate new technologies and to evaluate stormwater quality and reuse. The Project will be used as an environmental education center and partner with local schools and the community, increasing general awareness of water-related issues, ecosystem functions, and conservation practices.

Recreation

Construction of the Project is not just a water quality improvement and ecological effort—it also promotes environmental stewardship and enhances public engagement. Restoration projects provide opportunities for people to connect with nature, learn about conservation, and take part in rebuilding ecosystems that benefit both wildlife and society. The wetlands will foster community engagement, education, and recreation. These spaces create opportunities for people to connect with nature, participate in conservation efforts, and build stronger social ties. Urban wetlands provide multiple public health benefits, contributing to physical, mental, and environmental well-being. They help create healthier urban environments by improving water quality and improving mental well-being by providing access to green space. The Project will serve as an outdoor classroom, allowing schools and community groups to engage in hands-on learning about ecology, wildlife, and water conservation. The wetland complex will continue to improve throughout the life of the Project, increasing opportunities for recreation.

Conservation and Preservation of Water Resources

Preservation of water resources is achieved by this Project through the creation of urban wetlands and water quality improvements. Wetland plants, soils, and microorganisms will trap and break down excess nutrients, bacteria, and other pollutants, improving water quality within Pecan Creek and downstream within Deadman's Run. Urban wetland creation provides essential conservation and preservation of water resources by enhancing biodiversity, improving ecological processes, and sustaining other ecosystem functions. This Project will help the City of Lincoln adapt to climate change, restore lost habitats, and support wildlife and human well-being. This Project will provide valuable research opportunities for students and faculty at UNL. The wetland complex will act as living laboratories where they can study environmental processes, conservation strategies, and water quality and pollution monitoring. The wetland complex will continue to improve throughout the life of the Project, providing water quality benefits that can be improved over time with monitoring and research. This Project can provide valuable information on urban stormwater treatment to other communities and entities throughout Nebraska.

Wildlife Habitat

The wetlands will provide habitat for diverse plant, animal, and microorganism species that can contribute to agriculture and conservation. Wetlands are crucial for maintaining genetic diversity, especially in urban environments. Protecting these genetic resources ensures that ecosystems remain resilient. Wetlands provide essential habitat and resources for pollinators, which play a crucial role in fertilizing plants and supporting agriculture. Providing pollinator habitat within an urban environment will help to maintain and provide critical benefits for a sustainable ecosystem. The wetland complex will continue to improve throughout the life of the Project, increasing the biodiversity of plants, animals, and microorganisms.

Water Quality

This Project will improve water quality in Pecan Creek and Deadman's Run. The Project will draw water from Pecan Creek, filter the water through a wetland complex, and return the water into Pecan Creek. Pecan Creek drains into Deadman's Run, approximately 1,000 feet downstream of the Project.
Water quality will be improved by utilizing wetland plants, soils, and microorganisms to trap and break down pollutants and excess nutrients. Deadman's Run ("Dead Man's Run", LP2-20400) is listed as impaired due to high levels of *E. Coli* bacteria and aquatic life in the Water Quality Integrated Report (NDEE 2022). The water quality benefits from this Project will contribute to reductions in the *E. coli* within the stream and will help meet the goals of the TMDLs.

10. Are land rights necessary to complete your project? YES☐ NO☒

If yes:

10.A Provide a complete listing of all lands involved in the project.
10.B Attach proof of ownership for each easements, rights-of-way and fee title currently held.
10.C Provide assurance that you can hold or can acquire title to all lands not currently held.

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

This Project falls directly in line with the roles and responsibilities of the LPSNRD. The LPSNRD will obtain all necessary permits to complete the Project and any agreements required for authority to perform work on UNL property. UNL is a Project partner.

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

Without this Project, water from the urban drainage area that flow through Pecan Creek will remain untreated and continue to carry uncontrolled pollutant loads to Deadman's Run. This will continue to contribute to the water quality impairment on Deadman's Run.

If this project is not completed, the opportunity will be missed to create the educational experience and community outreach potential. This area of the UNL campus would eventually be developed, missing the opportunity to create an ecosystem and aquatic habitat within the city. This Project can provide valuable information on urban stormwater treatment to other communities and entities throughout Nebraska. Without this Project, this experience and information will be missed.

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 draw water from Pecan Creek, filter the water through a wetland complex, and return the water into Pecan Creek. Pecan Creek drains into Deadman's Run, approximately 1,000 feet downstream of the Project.

Deadman's Run ("Dead Man's Run", LP2-20400) is listed as impaired due to high levels of *E. Coli* bacteria and aquatic life in the Water Quality Integrated Report (NDEE 2022). By virtue of trapping or removing sediments, nutrients, and bacteria this Project will improve downstream water quality. It will additionally lower risk for contaminates into groundwater.

Lincoln's drinking water source is groundwater that comes from wells along the Platte River, located 20 miles northeast of Lincoln. These well fields provide water to the entire population of Lincoln, which, as of the latest available data, is approximately 295,000 residents. This Project will reduce the amount of nutrients in the streams that could contribute to poor groundwater quality.

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 LPSNRD and Nebraska Department of Natural Resources (NeDNR) jointly adopted a Voluntary Integrated Management Plan (IMP) in May of 2014. An in-depth public involvement plan that included focus groups, a 13-month stakeholder process, a virtual town hall, and outside agency outreach helped develop goals and objectives within the IMP. The IMP focuses on integrating the management of all of the water supplies and uses within the District. The three goals in the IMP are to (1) ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands, (2) to achieve a sustainable water supply and to manage the supply and make it available whenever and wherever needed, and (3) to support water use and conservation that optimizes benefits.

Actions to meet the goals and objectives of this IMP are underway and are reported jointly by LPSNRD and NeDNR annually. NeDNR monitors and reports on surface water permitting activities, stream gage measurements, surface water pump inspections, surface water irrigation use, and the headwaters inventory program which monitors groundwater/surface water interaction points. LPSNRD monitors irrigated acres expansion, groundwater level measurements, and municipal water use. LPSNRD also leads community education, outreach, and collaboration with other entities and organizations. NeDNR and LPSNRD work together with the Lower Platte River Basin Consortium, which developed a Drought Contingency Plan in 2019, and the Lower Platte River Basin Coalition, which approved a basin-wide plan in 2017.

This Project will help promote goals (1) and (3) of the IMP. Goal (1) is to ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands. Some objectives within this goal include evaluating variations in water inventory due to short-and long-term climate trends, to develop a more comprehensive water inventory, and to project changes to water inventory due to urban growth. Research and data collection will be ongoing once the Project is constructed. Flowmeters upstream and downstream of the wetland complex on Pecan Creek as well as on Deadman's Run upstream and downstream of the confluence with Pecan Creek will provide valuable water quantity information and benefit the goal of sufficient water supply data. Water quality samplers will also be installed on Pecan Creek and Deadman's Run. There will be a long-term evaluation and monitoring plan, providing valuable information on water quality at these locations within the District.

IMP goal (3) is to support water use and conservation that optimizes benefits. Some objectives of this goal include determining best available irrigation technologies, evaluating potential benefits of capturing and reusing stormwater, and expanding public education programs with the goals of increasing general awareness of water availability issues and benefits of conservation practices. This Project will provide a dedicated space for urban wetland creation and education. Research opportunities will be available for students and faculty to evaluate new technologies and to evaluate stormwater quality and reuse. The Project will serve as an environmental education center and partner with local schools and the community, increasing general awareness of water-related issues, ecosystem functions, and conservation practices.

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.

   This Project will provide minimal amounts of recharge and reduction of aquifer depletion as the wetlands are small in scale. There is the potential for a groundwater mound to form below the wetlands to help recharge the aquifer. Because the Project is not specifically a recharge project that measured volume and area, it is difficult to quantify and is subject to current conditions. Cross-basin benefits are not anticipated.

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.

Recreation

Construction of the Project is not just a water quality improvement and ecological effort—it also promotes environmental stewardship and enhances public engagement. Restoration projects provide opportunities for people to connect with nature, learn about conservation, and take part in rebuilding ecosystems that benefit both wildlife and society. The wetlands will foster community engagement, education, and recreation. These spaces create opportunities for people to connect with nature, participate in conservation efforts, and build stronger social ties. Urban wetlands provide multiple public health benefits, contributing to physical, mental, and environmental well-being. They help create healthier urban environments by improving water quality and improving mental well-being by providing access to green space. The Project will serve as an outdoor classroom, allowing schools and community groups to engage in hands-on learning about ecology, wildlife, and water conservation. The wetland complex will continue to improve throughout the life of the Project, increasing opportunities for recreation. Without this Project, Pecan Creek remains relatively inaccessible and does not provide the community with educational and recreation opportunities.

Conservation and Preservation of Water Resources

Preservation of water resources is achieved by this Project through the creation of urban wetlands and water quality improvements. Wetland plants, soils, and microorganisms will trap and break down excess nutrients, bacteria, and other pollutants, improving water quality within Pecan Creek and downstream within Deadman's Run. Urban wetland creation provides essential conservation and preservation of water resources by enhancing biodiversity, improving ecological processes, and sustaining other ecosystem functions. This Project will help the City of Lincoln adapt to climate change, restore lost habitats, and support wildlife and human well-being. This Project will provide valuable research opportunities for students and faculty at UNL. The wetland complex will act as living laboratories where they can study environmental processes, conservation strategies, and water quality and pollution monitoring. The wetland complex will continue to improve throughout the life of the Project, providing water quality benefits that can be improved over time with monitoring and research. This Project can provide valuable information on urban stormwater treatment to other

communities and entities throughout Nebraska. Without this Project, water quality would not be improved.

Wildlife Habitat

The wetlands will provide habitat for diverse plant, animal, and microorganism species that can contribute to agriculture and conservation. Wetlands are crucial for maintaining genetic diversity, especially in urban environments. Protecting these genetic resources ensures that ecosystems remain resilient. Wetlands provide essential habitat and resources for pollinators, which play a crucial role in fertilizing plants and supporting agriculture. Providing pollinator habitat within an urban environment will help to maintain and provide critical benefits for a sustainable ecosystem. The wetland complex will continue to improve throughout the life of the Project, increasing the biodiversity of plants, animals, and microorganisms. Without this Project, this area of the UNL campus could become developed, further decreasing habitat opportunities within the city.

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.

This Project will improve water quality through the creation of wetlands adjacent to Pecan Creek that will treat urban stormwater runoff from the creek, reducing the influx of nutrients and other pollutants to downstream waterbodies.

Pecan Creek is a tributary to Deadman's Run, with the confluence approximately 1,000 feet downstream of the Project. Deadman's Run ("Dead Man's Run", LP2-20400) is designated as having Primary Contact Recreation beneficial use according to the NDEE 2022. This means that is used, or has a high potential to be used, for recreational activities where the body may come into prolonged contact with the water. Other beneficial uses within the watershed include Aquatic Life - Coldwater Class B, Aquatic Habitat – Warmwater Class A and B, Water Supply – Public Drinking, Agricultural Water Supply, Industrial Water Supply, and Aesthetic Beneficial Use. Improved water quality will increase all beneficial uses listed above in the following ways:

- The Project will treat urban stormwater runoff, improving water quality by removing nutrients and other pollutants. This will improve the Aquatic Life beneficial use for fish and other aquatic species.
- Much of the watershed's recreational opportunities include water-based recreation such as fishing. The residents will benefit from improved water quality.
- Agricultural beneficial use means that it is used for general agricultural purpose without treatment. Landowners downstream of

the City of Lincoln would benefit from improved water for agricultural purposes, including irrigation and livestock watering.
- This Project will not reduce any beneficial uses.

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.

A summary of all initial capital costs related to the Project are presented in the table below, and a more detailed breakdown of the construction and monitoring equipment costs are provided in the SIA Table B-1 and B-2. The Project life is estimated at 15-years (per NRCS practice code 658 for wetland creation), although many components of the project are designed to last longer than 15 years. Annual operation and maintenance costs were assumed to be 0.75% of construction costs calculated over 15 years. There are no expected land and water acquisition costs as the Project will occur on UNL property and UNL is a Project partner.

Cost Summary

Summary of Capital Costs	
Construction	$ 801,630
Engineering, Permitting, and Construction Oversight	$ 228,110
Monitoring Equipment	$ 168,300
Land Rights	$ -
Project Administration	$ 50,000
Total Costs	**$ 1,248,040**

	Annual Cost	Lifetime (yrs)	Total
Operation and Maintenance	$ 6,010	15	$ 90,150

This Project is cost-effective due to the significant amount of intangible benefits that this Project provides. Benefits for this Project are mostly intangible, meaning that the majority of benefits cannot be expressed in monetary terms because of the difficulty in annualizing benefits due to the nature of benefits. It is difficult to predict the year and costs of the received benefits from this Project due to the types of benefits and unpredictable nature of the benefitted streams and water quality improvements. A description of the benefits from the Project are described below:

Provisioning Services:

Freshwater Supply: This Project will develop urban wetlands that will purify water by trapping and absorbing nutrients, bacteria, and pollutants before they reach Deadman's Run.

Genetic Resources: The wetlands will provide habitat for diverse plant, animal, and microorganism species that can contribute to agriculture and conservation. Wetlands are crucial for maintaining genetic diversity, especially in urban environments. Protecting these genetic resources ensure that ecosystems remain resilient.

Regulating Services:

Water Quality Improvements: Water quality will be improved by removing sediment, pollutants, and excess nutrients. Wetland plants, soils, and microorganisms will trap and break down excess nutrients, bacteria, and other pollutants improving water quality within Pecan Creek and downstream within Deadman's Run.

Pollinator Habitat: Wetlands provide essential habitat and resources for pollinators, which play a crucial role in fertilizing plants and supporting agriculture. Providing pollinator habitat within an urban environment will help to maintain and provide critical benefits for a sustainable ecosystem.

Supporting Services:

Wetland Creation: Urban wetland creation provides essential supporting services by enhancing biodiversity, improving ecological processes, and sustaining other ecosystem functions. This Project will help the City of Lincoln adapt to climate change, restore lost habitats, and support wildlife and human well-being.

Improved Public Health: Urban wetlands provide multiple public health benefits, contributing to physical, mental, and environmental well-being. As supporting ecosystem services, they help create healthier urban environments by improving water quality and improving mental well-being by providing access to green space.

Cultural Services:

Community Engagement: Urban wetlands serve as important cultural ecosystem services by fostering community engagement, education, and recreation. These spaces create opportunities for people to connect with nature, participate in conservation efforts, and build stronger social ties.

Education Center and Activities: The Project will serve as an outdoor classroom, allowing schools and community groups to engage in hands-on learning about ecology, wildlife, and water conservation.

Research Opportunities: This Project will provide valuable research opportunities for students and faculty at UNL. The wetland complex will act as living laboratories where they can study environmental processes, conservation strategies, water quantity, and water quality and pollution monitoring.

Ecosystem Restoration: Construction of the Project is not just an ecological effort—it is also a cultural service that promotes environmental stewardship and enhances public engagement. Restoration projects provide opportunities for people to connect with nature, learn about conservation, and take part in rebuilding ecosystems that benefit both wildlife and society.

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.

   Section 303(d) of the Environmental Protection Agency's Clean Water Act is required to maintain the integrity of the Nation's waters and requires states to establish a list of impaired waters that do not meet water quality standards. Once on the 303(d) list of impaired waters, it is required that a Total Maximum Daily Load (TMDL) report is developed to set goals and pollutant load reductions required for the water body to meet water quality standards. The NDEE 2022 lists Deadman's Run ("Dead Man's Run", LP2-20400) on the 303(d) list of impaired waters for *E. coli.* Pecan Creek is a tributary to Deadman's Run, with the confluence approximately 1,000 feet downstream of the Project.

   The water quality benefits from this Project will contribute to reductions in the *E. coli* within the stream. This will be achieved through implementation of the urban stormwater wetlands that filter excess nutrients, bacteria, and other pollutants before they enter the downstream waterbody. This Project will help meet the goals of the TMDLs.

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.

Urban wetlands provide multiple public health benefits, contributing to physical, mental, and environmental well-being. As supporting ecosystem services, they help create healthier urban environments by improving air and water quality, reducing disease risks, and improving mental well-being by providing access to green space.

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.

This Project will improve water quality in Pecan Creek and Deadman's Run. The Project will draw water from Pecan Creek, filter the water through a wetland complex, and return the water into Pecan Creek. Pecan Creek drains into Deadman's Run, approximately 1,000 feet downstream of the Project. Water quality will be improved by utilizing wetland plants, soils, and microorganisms to trap and break down pollutants and excess nutrients. Deadman's Run ("Dead Man's Run", LP2-20400) is listed as impaired due to high levels of *E. Coli* bacteria and aquatic life in the Water Quality Integrated Report (NDEE 2022). The water quality benefits from this Project will contribute to reductions in the *E. coli* within the stream and will help meet the goals of the TMDLs. The Project will provide benefits to the entire watershed, which is approximately 478 acres. The local public within the watershed and specifically in areas near the Project site will benefit most from this Project. The City of Lincoln has a population of approximately 295,000 residents.

Deadman's Run is designated as having Primary Contact Recreation beneficial use according to the NDEE 2022. This means that is used, or has a high potential to be used, for recreational activities where the body may come into prolonged contact with the water. Other beneficial uses within the watershed include Aquatic Life - Coldwater Class B, Aquatic Habitat – Warmwater Class A and B, Water Supply – Public Drinking, Agricultural Water Supply, Industrial Water Supply, and Aesthetic Beneficial Use.

Within the City of Lincoln Comprehensive Watershed Master Plan (City of Lincoln, 2022), three additional water quality improvement projects have been identified within the Deadman's Run watershed. This includes improvements to two small detention ponds and one hydrodynamic separator. These have improved water quality but not sufficiently to remove Deadman's Run from the list of impaired waterbodies.

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.

The LPSNRD, the City of Lincoln, and UNL have been avid supporters of this Project and have participated in the planning efforts and alternatives analysis of the Project to date. The LPSNRD has taxing authority $0.021581 per $100 valuation based on local property taxes. They have included the cost of the construction of the Project in conjunction with the overall Deadman's Run flood resiliency project in their upcoming annual fiscal budgets and long-range plans. The City of Lincoln has the project budgeted in conjunction with the overall Deadman's Run flood resiliency project as part of the stormwater bond.

Other funding sources for the Project include faculty hours from UNL and an in-kind donation of a trailer for use as the educational center.

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.

"Water Sustainability" means water use is sustainable when current use promotes healthy watersheds, improves water quality, and protects the ability of future generations to meet their needs. The local jurisdiction that manages and enforces water sustainability is the LPSNRD. The 2014 Voluntary Integrated Management Plan (IMP), the 2019 Lower Platte River Basin Consortium Drought

Contingency Plan, and the 2017 (updated in 2022) Lower Platte River Basin Coalition Basin-Wide Plan have been created and followed to support sustainable water use.

The IMP focuses on integrating the management of all of the water supplies and uses within the District. The three goals in the IMP are to (1) ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands, (2) to achieve a sustainable water supply and to manage the supply and make it available whenever and wherever needed, and (3) to support water use and conservation that optimizes benefits.

Actions to meet the goals and objectives of this IMP are underway and are reported jointly by LPSNRD and NeDNR annually. NeDNR monitors and reports on surface water permitting activities, stream gage measurements, surface water pump inspections, surface water irrigation use, and the headwaters inventory program which monitors groundwater/surface water interaction points. LPSNRD monitors irrigated acres expansion, groundwater level measurements, and municipal water use. LPSNRD also leads community education, outreach, and collaboration with other entities and organizations. NeDNR and LPSNRD work together with the Lower Platte River Basin Consortium, which developed a Drought Contingency Plan in 2019, and the Lower Platte River Basin Coalition, which approved a basin-wide plan in 2017.

This Project will help promote goals (1) and (3) of the IMP. Goal (1) is to ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands. Some objectives within this goal include evaluating variations in water inventory due to short-and long-term climate trends, to develop a more comprehensive water inventory, and to project changes to water inventory due to urban growth. Research and data collection will be ongoing once the Project is constructed. Flowmeters upstream and downstream of the wetland complex on Pecan Creek as well as on Deadman's Run upstream and downstream of the confluence with Pecan Creek will provide valuable water quantity information and benefit the goal of sufficient water supply data. Water quality samplers will also be installed on Pecan Creek and Deadman's Run. There will be a long-term evaluation and monitoring plan, providing valuable information on water quality at these locations within the District.

IMP goal (3) is to support water use and conservation that optimizes benefits. Some objectives of this goal include determining best available irrigation technologies, evaluating potential benefits of capturing and reusing stormwater, and expanding public education programs with the goals of increasing general awareness of water availability issues and benefits of conservation practices. This Project will provide a dedicated space for urban wetland creation and education. Research opportunities will be available for students and faculty to evaluate new technologies and to evaluate stormwater quality and reuse. The

Project will serve as an environmental education center and partner with local schools and the community, increasing general awareness of water-related issues, ecosystem functions, and conservation practices.

This Project supports sustainable water use by promoting healthy watersheds through improved water quality, improved wildlife habitat, and ecosystem restoration. This supports the beneficial designated uses of aquatic life and recreation. The target area includes Pecan Creek, which is a tributary of Deadman's Run. The usage of water within the watershed is predominantly urban. The Project will provide benefits to the entire watershed, which is approximately 478 acres. The local public within the watershed and specifically in areas near the Project site will benefit most from this Project. The City of Lincoln has a population of approximately 295,000 residents. They will benefit from improved water quality as well as community outreach and educational opportunities at the wetland complex. Students and faculty at UNL will have the opportunity to participate in in-depth research projects that could provide benefits to the entire State and beyond. Stakeholders of this Project include the partners (LPSNRD, City of Lincoln, UNL, Lincoln Public Schools, Omaha Public Schools) and community members.

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.

Water quality is a significant issue in the watershed, as identified by Deadman Run's ("Dead Man's Run", LP2-20400) listing in the 2022 Integrated Report for *E. coli.* This Project will address these problems by providing site-specific methods capture sediment and nutrients and improve water quality and overall health of the stream's ecosystem. Pecan Creek is a tributary to Deadman's Run, with the confluence approximately 1,000 feet downstream of the Project. The water quality benefits from this Project will contribute to reductions in the *E. coli* within the stream. This will be achieved through implementation of the urban storm water wetlands that capture sediment and associated nutrients and bacteria before they enter the downstream waterbody.

The Project will provide benefits to the entire watershed, which is approximately 478 acres. The local public within the watershed and specifically in areas near the Project site will benefit most from this Project. The City of Lincoln has a population of approximately 295,000 residents. They will benefit from improved water quality as well as community outreach and educational opportunities at the wetland complex. Students and faculty at UNL will have the opportunity to

participate in in-depth research projects on effectiveness of wetlands on improving water quality that could provide benefits to the entire State and beyond.

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.

This Project is not reliant on outside funding for the initial implementation. The funding is being provided by the Partners and the funding breakdown is provided below. Future stages of the project my purse outside funding sources such as Nebraska Environmental Trust (NET) funds to support educational outreach efforts. Using WSF now to implement this project will leverage the ability to utilize this funding program in the future.

Funding Breakdown

Pecan Creek Wetland Complex	Total Costs	Spent/ Ineligible	Eligible WSF Costs	STATE WSF Grant Request	LOCAL Total Local Cost Share
Construction	$ 801,630	--	$ 801,630	$ 335,500	$ 466,130
Engineering, Permitting, and Construction Oversight	$ 228,110	$ 82,710	$ 145,400	$ 145,400	$ -
Monitoring Equipment	$ 168,300	--	$ 168,300	$ 168,300	$ -
Land Rights	--	--	--	--	$ -
Project Administration	$ 50,000	--	$ 50,000	$ 50,000	$ -
Totals	**$ 1,248,040**	**$ 82,710**	**$ 1,165,330**	**$ 699,200**	**$ 466,130**

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.

This Project is specifically targeted to improve the health and function of Pecan Creek and the downstream Deadman's Run watershed.

Preservation of water resources is achieved by this Project through the creation of urban wetlands and water quality improvements. Wetland plants, soils, and microorganisms will trap and break down excess nutrients, bacteria, and other pollutants, improving water quality within Pecan Creek and downstream within Deadman's Run. Urban wetland creation provides essential conservation and

preservation of water resources by enhancing biodiversity, improving ecological processes, and sustaining other ecosystem functions. This Project will help the City of Lincoln adapt to climate change, restore lost habitats, and support wildlife and human well-being. The water quality benefits from this Project will contribute to reductions in the *E. coli* within the stream and will help meet the goals of the TMDLs. Wetland plants, soils, and microorganisms will trap and break down the pollutants and excess nutrients, improving water quality within Pecan Creek and downstream within Deadman's Run. This Project will provide valuable research opportunities for students and faculty at UNL. The wetland complex will act as living laboratories where they can study environmental processes, conservation strategies, and water quality and pollution monitoring.

The wetlands will provide habitat for diverse plant, animal, and microorganism species that can contribute to agriculture and conservation. Wetlands are crucial for maintaining genetic diversity, especially in urban environments. Protecting these genetic resources ensures that ecosystems remain resilient. Wetlands provide essential habitat and resources for pollinators, which play a crucial role in fertilizing plants and supporting agriculture. Providing pollinator habitat within an urban environment will help to maintain and provide critical benefits for a sustainable ecosystem. The wetland complex will continue to improve throughout the life of the Project, increasing the biodiversity of plants, animals, and microorganisms.

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.

The 2020 Annual Report (NDNR 2020), lists the goals as related to the Water Sustainability Fund:

- Provide financial assistance to programs, projects, or activities that increase aquifer recharge, reduce aquifer depletion, and increase streamflow;
- Remediate or mitigate threats to drinking water;
- Promote the goals and objectives of approved integrated management plans or groundwater management plans;
- Contribute to multiple water supply management goals including flood control, reducing threats to property damage, agricultural uses, municipal and industrial uses, recreational benefits, wildlife habitat, conservation, and preservation of water resources;
- Assist municipalities with the cost of constructing, upgrading, developing, and replacing sewer infrastructure facilities as part of a combined sewer overflow project;
- Provide increased water productivity and enhance water quality;
- Use the most cost-effective solutions available; and
- Comply with interstate compacts, decrees, other state contracts and agreements and federal law.

The objectives of the third, fourth, sixth, and seventh goals are met as follows. Costs were evaluated during the alternatives analysis to ensure that the most cost-effective solutions are being implemented.

Promote Goals and Objectives of approved IMPs

The three goals in the 2014 Voluntary Integrated Management Plan (IMP) are to (1) ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands, (2) to achieve a sustainable water supply and to manage the supply and make it available whenever and wherever needed, and (3) to support water use and conservation that optimizes benefits.

This Project will help promote goals (1) and (3) of the IMP. Goal (1) is to ensure the District has sufficient data to enable a water supply that is in balance with current and future water demands. Some objectives within this goal include evaluating variations in water inventory due to short-and long-term climate trends, to develop a more comprehensive water inventory, and to project changes to water inventory due to urban growth. Research and data collection will be ongoing once the Project is constructed. Flowmeters upstream and downstream of the wetland complex on Pecan Creek as well as on Deadman's Run upstream and downstream of the confluence with Pecan Creek will provide valuable water quantity information and benefit the goal of sufficient water supply data. Water quality samplers will also be installed on Pecan Creek and Deadman's Run. There will be a long-term evaluation and monitoring plan, providing valuable information on water quality at these locations within the District.

IMP goal (3) is to support water use and conservation that optimizes benefits. Some objectives of this goal include determining best available irrigation

technologies, evaluating potential benefits of capturing and reusing stormwater, and expanding public education programs with the goals of increasing general awareness of water availability issues and benefits of conservation practices. This Project will provide a dedicated space for urban wetland creation and education. Research opportunities will be available for students and faculty to evaluate new technologies and to evaluate stormwater quality and reuse. The Project will serve as an environmental education center and partner with local schools and the community, increasing general awareness of water-related issues, ecosystem functions, and conservation practices.

Recreation

Construction of the Project is not just a water quality improvement and ecological effort—it also promotes environmental stewardship and enhances public engagement. Restoration projects provide opportunities for people to connect with nature, learn about conservation, and take part in rebuilding ecosystems that benefit both wildlife and society. The wetlands will foster community engagement, education, and recreation. These spaces create opportunities for people to connect with nature, participate in conservation efforts, and build stronger social ties. Urban wetlands provide multiple public health benefits, contributing to physical, mental, and environmental well-being. They help create healthier urban environments by improving water quality and improving mental well-being by providing access to green space. The Project will serve as an outdoor classroom, allowing schools and community groups to engage in hands-on learning about ecology, wildlife, and water conservation. The wetland complex will continue to improve throughout the life of the Project, increasing opportunities for recreation.

Conservation and Preservation of Water Resources

Preservation of water resources is achieved by this Project through the creation of urban wetlands and water quality improvements. Wetland plants, soils, and microorganisms will trap and break down excess nutrients, bacteria, and other pollutants, improving water quality within Pecan Creek and downstream within Deadman's Run. Urban wetland creation provides essential conservation and preservation of water resources by enhancing biodiversity, improving ecological processes, and sustaining other ecosystem functions. This Project will help the City of Lincoln adapt to climate change, restore lost habitats, and support wildlife and human well-being. This Project will provide valuable research opportunities for students and faculty at UNL. The wetland complex will act as living laboratories where they can study environmental processes, conservation strategies, and water quality and pollution monitoring. The wetland complex will continue to improve throughout the life of the Project, providing water quality benefits that can be improved over time with monitoring and research. This Project can provide valuable information on urban stormwater treatment to other communities and entities throughout Nebraska.

Wildlife Habitat

The wetlands will provide habitat for diverse plant, animal, and microorganism species that can contribute to agriculture and conservation. Wetlands are crucial for maintaining genetic diversity, especially in urban environments. Protecting these genetic resources ensures that ecosystems remain resilient. Wetlands provide essential habitat and resources for pollinators, which play a crucial role in fertilizing plants and supporting agriculture. Providing pollinator habitat within an urban environment will help to maintain and provide critical benefits for a sustainable ecosystem. The wetland complex will continue to improve throughout the life of the Project, increasing the biodiversity of plants, animals, and microorganisms. Without this Project, this area of the UNL campus could become developed, further decreasing habitat opportunities within the city.

Water Quality

This Project will improve water quality in Pecan Creek and Deadman's Run. The Project will draw water from Pecan Creek, filter the water through a wetland complex, and return the water into Pecan Creek. Pecan Creek drains into Deadman's Run, approximately 1,000 feet downstream of the Project.
Water quality will be improved by utilizing wetland plants, soils, and microorganisms to trap and break down pollutants and excess nutrients. Deadman's Run ("Dead Man's Run", LP2-20400) is listed as impaired due to high levels of *E. Coli* bacteria and aquatic life in the Water Quality Integrated Report (NDEE 2022). The water quality benefits from this Project will contribute to reductions in the *E. coli* within the stream and will help meet the goals of the TMDLs.

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.

States are required to establish total maximum daily loads (TMDLs) for pollutants causing impairments in the waterbodies in accordance with the Section 303(d) of the federal Clean Water Act (CWA). The LPSNRD has a responsibility to meet the TMDL for Deadman's Run. This Project helps to reduce bacteria within the stream by reducing the influx of sediment and associated bacteria to downstream waterbodies. "Water Sustainability" is defined in Nebraska Title 264 as when water use is sustainable when current use promotes healthy watersheds, improves water quality, and protects the ability of future generations to meet their needs. This Project promotes healthy watersheds through creating wetlands, providing habitat to plant and animal species, and improving water quality.

SUPPLEMENTAL INFORMATION ATTACHMENT

COVER LETTER

APPLICATION

SUPPLEMENTAL INFORMATION ATTACHMENT

BIBLIOGRAPHY

PAPIO MISSOURI RIVER NATURAL RESOURCES DISTRICT

HOUSTON engineering, inc.

SECTION A

A-6 Overview

Figure A-1 – Location Map

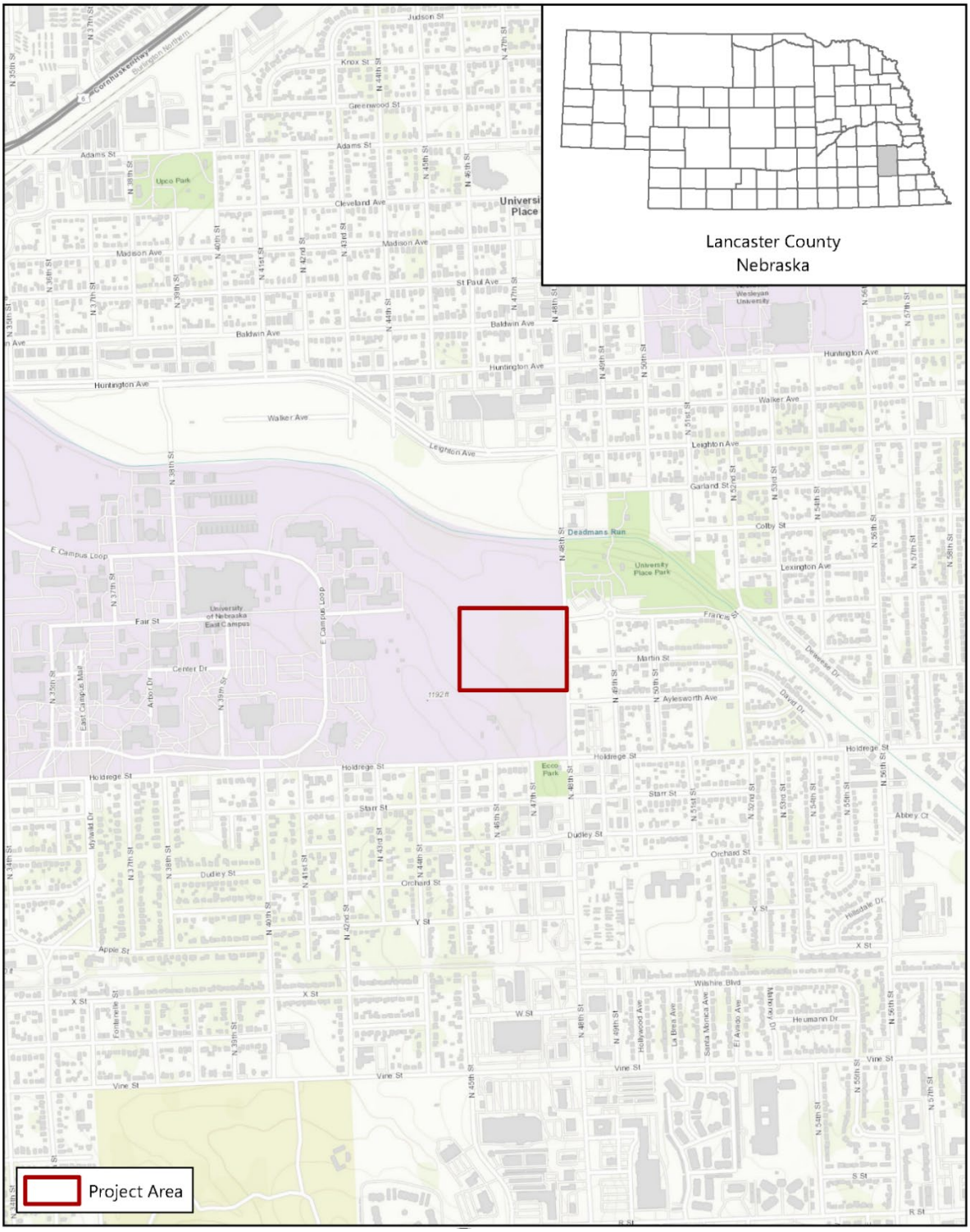
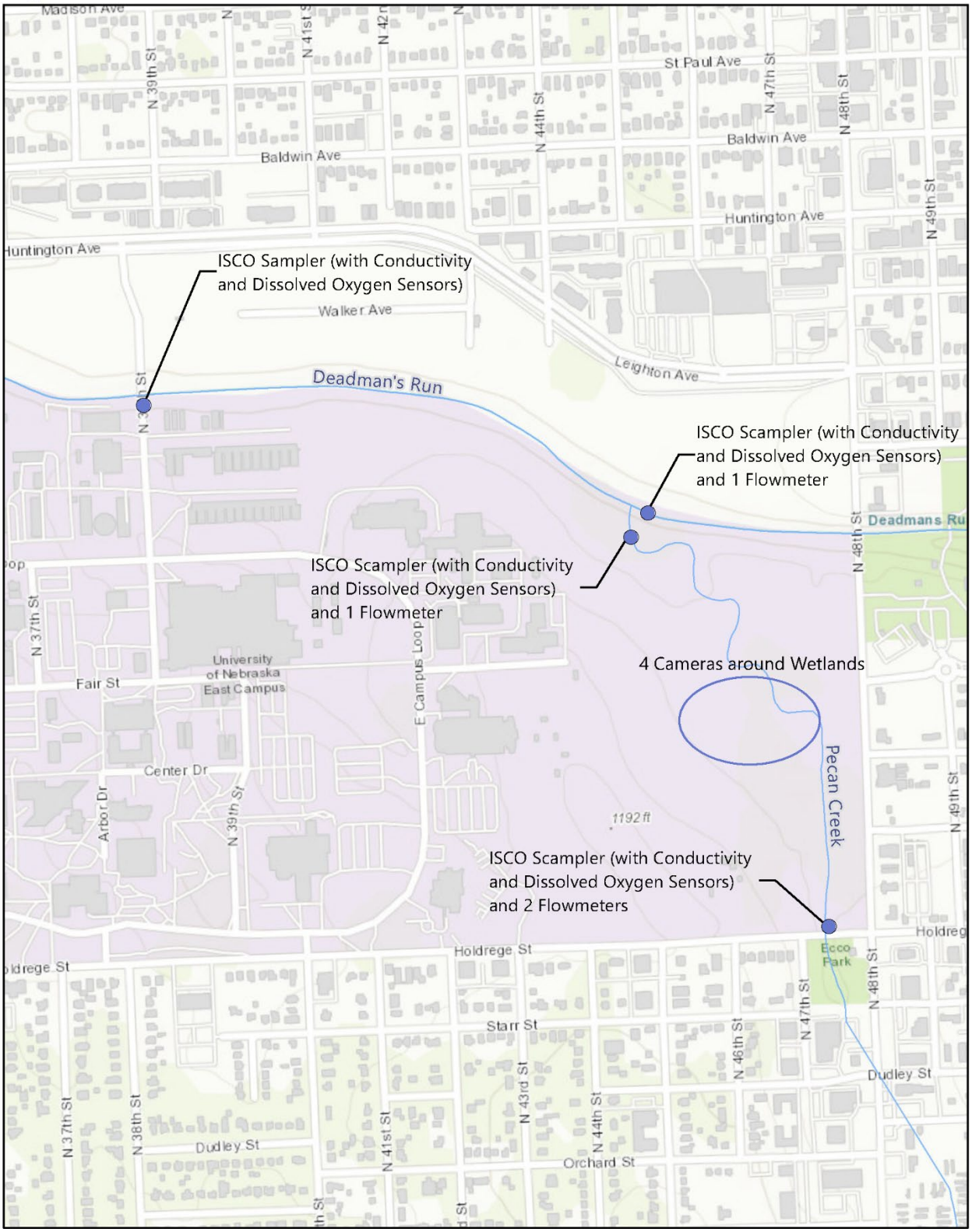


Figure A-2 – Monitoring Locations



SECTION B

B-1 Prove Engineering & Technical Feasibility

See the following page for:

- Figure B-1 (Preliminary Design Plans)

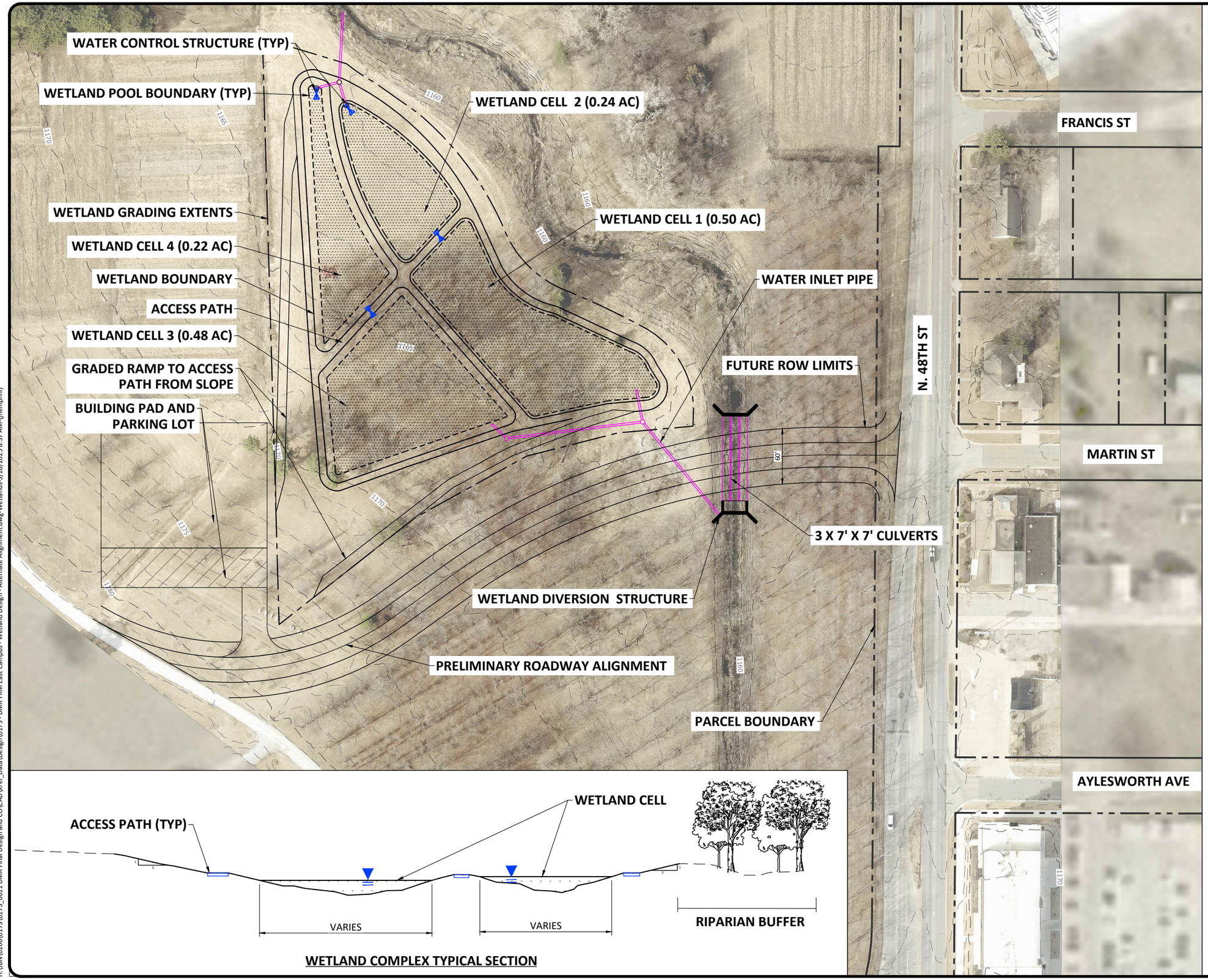
B-2 Prove Economic Feasibility

Table B-1 – Pecan Wetland Complex Cost Estimate

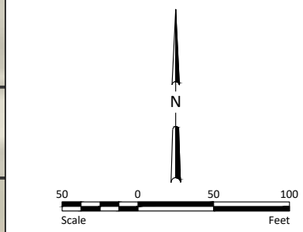
Item	Quantity	Unit	Unit Cost	Total
Wetland Cell Excavation	32,415	CY	$5	$162,075
Water Inlet/Outlet Pipe	450	LF	$60	$27,000
Junctions/Pipe Angles (3)	15	VF	$400	$6,000
Water Control Structures (4)	4	EA	$5,000	$20,000
Inter-Cell Connection Pipe	40	LF	$40	$1,600
Access Road Fill	3,450	CY	$8	$27,600
Access Road Culvert (Triple Box 7'x7')	92	LF	$3,500	$322,000
Culvert Headwall/Wingwall	30	CY	$1,200	$36,000
48" Chain Link Fence on Culvert Ends	130	LF	$150	$19,500
Diversion Weir Structure	20	CY	$1,200	$24,000
Parking Lot/Trailer Pad Fill	2,000	CY	$8	$16,000
Curb Cut	100	LF	$10	$1,000
Native Seeding	4	AC	$1,500	$5,250
Subtotal				$668,025
Contingency (20%)				$133,605
Total				**$801,630**

Table B-2 – Monitoring Equipment Cost Estimate

Item	Quantity	Unit Cost	Total
Flow meter	4	$18,341	$73,360
ISCOs	4	$12,531	$50,120
Platte Basin Timelapse	4	$6,250	$25,000
Trash trap	1	$10,000	$10,000
Conductivity sensor	4	$1,015	$4,060
Dissolved oxygen sensors	4	$1,439	$5,760
Total			**$168,300**



WETLAND COMPLEX TYPICAL SECTION



NOTES:

BASE CONCEPT:

1) EXCAVATION TO CREATE FOUR WETLAND CELLS IN TWO TREATMENT TRAINS.
2) GRADING AND EXCAVATION TO PARTIALLY ENCLOSED WETLAND CELLS TO ALLOW DIVERSION FROM LOCAL TRIBUTARY; INCLUDE WEIR AND DIVERSION PIPE UPSTREAM OF 7' X 7' CULVERTS; WATER SOURCE FROM DIRECT RAINFALL AND DIVERTED FLOW FROM TRIBUTARY

FUTURE FACILITIES (NOT INCLUDED IN CURRENT PROJECT)

1) BUILDING OR CLASSROOM SETTING.

FUTURE IMPROVEMENTS (NOT INCLUDED IN CURRENT PROJECT)

1) INTERSECTION IMPROVEMENTS WILL BE REQUIRED WHEN THE CONNECTION IS MADE TO N. 48TH ST.

PRELIMINARY
NOT FOR CONSTRUCTION

Figure B-1

No.	Revision	Date	By

PECAN CREEK WETLAND COMPLEX PROJECT
LOWER PLATTE SOUTH NATURAL RESOURCES DISTRICT
LINCOLN, NEBRASKA

UNL WETLAND COMPLEX

HOUSTON engineering, Inc.

Drawn By	SMS
Checked By	___
Date	11-15-2024
Scale	As Shown
Project No.	0173-0011
SHEET	___

Letters of Support

LINCOLN
Transportation and Utilities

March 31, 2025

Nebraska Natural Resources Commission
301 Centennial Mall South
P.O. Box 94676
Lincoln, NE 68509-4676

RE: Deadmans Run - UNL East Campus Wetland Complex Project

Dear Commissioners and Scoring Committee Members,

The Lower Platte South Natural Resources District (LPSNRD) and City of Lincoln have identified an opportunity with University of Nebraska-Lincoln (UNL) to develop a wetland complex on the UNL East Campus property. The wetland will treat flows from the local tributary, Pecan Creek, that routes through East Campus and drains urban stormwater runoff from the City of Lincoln. The project will provide water quality and ecosystem improvements, research, and serve as an outdoor classroom for education and a local outreach opportunity.

The City of Lincoln is in support of this project. The City of Lincoln is an equal partner with the LPSNRD on a larger Deadmans Run Flood Reduction Project, a locally funded and led effort, which seeks to reduce flooding risks to approximately 480 homes and businesses. The City is excited to have UNL as a partner in this flood reduction effort, and in establishing a detention basin on the UNL East Campus property and the adjoining wetland complex. This Wetland Complex Project will be able to leverage the location and features of the detention basin and will aid in meeting the City's National Pollutant Discharge Elimination System (NPDES) permit for the City's Municipal Separate Storm Sewer System.

This Wetland Complex Project, combined with the Deadmans Run Flood Reduction effort will provide a wholistic approach to improve both water quantity and quality. Improving water quality will benefit Deadmans Run, an impaired waterbody; and opportunities for public involvement and education will benefit the larger community, students, and research. We encourage you to approve the Water Sustainability Fund application for this project.

Sincerely,

Tim Zach, PE, CFM
Superintendent of Stormwater
Watershed Management Division, Lincoln Transportation & Utilities

27 March 2025

Nebraska Natural Resources Commission
301 Centennial Mall South
P.O. Box 94676
Lincoln, NE 68509-4676

RE: Deadmans Run - UNL East Campus Wetland Complex Project

Dear Commissioners and Scoring Committee Members,

The Lower Platte South Natural Resources District (LPSNRD) and City of Lincoln have identified an opportunity with University of Nebraska-Lincoln (UNL) to develop a wetland complex on the UNL East Campus property. The wetland will treat flows from the local tributary, Pecan Creek, that routes through East Campus and drains urban stormwater runoff from the City of Lincoln.

The School of Natural Resources at the University of Nebraska-Lincoln is in support of this project. With our campus partners, including at least 4 other academic units in the Institute of Agriculture and Natural Resources, we will use the wetland project for experiential learning focused on groundwater, wetland ecology, and riparian systems for our students. We also intend to involve high school students from Lincoln Northeast High School in learning opportunities at the site. Further, the School of Natural Resources is working with the NU Foundation to engage donors to develop an environmental education center at the site, to leverage the habitats that will become available for engagement with the public.

We encourage you to approve the Water Sustainability Fund application for this project.

Sincerely,

Director, School of Natural Resources
Professor of Conservation Biology and Animal Ecology

University of Nebraska Lincoln

INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
OFFICE OF THE NU VICE PRESIDENT AND IANR HARLAN VICE CHANCELLOR

March 27, 2025

Nebraska Natural Resources Commission
Water Sustainability Fund
Department of Natural Resources
301 Centennial Mall South
Lincoln, NE 68508

RE: Letter of Support – Pecan Creek Wetland Complex Project

Dear Members of the Commission,

I am proud to offer my strongest support for the Pecan Creek Wetland Complex project—part of the broader Deadman's Run–UNL East Campus Wetland Project—submitted by the Lower Platte South Natural Resources District for funding through the Nebraska Water Sustainability Fund. This collaborative effort between the Lower Platte South Natural Resources District, the City of Lincoln, and the University of Nebraska–Lincoln exemplifies the kind of multi-agency partnership essential to advancing our state's water and environmental goals.

This project represents a transformative opportunity for Nebraska—both in terms of its environmental impact and its educational and research potential. The vision for the Pecan Creek Wetland Complex draws inspiration from the Wilma H. Schiermeier Olentangy River Wetland Research Park at The Ohio State University, a nationally recognized model of how restored urban wetlands can serve as centers for innovation, education, and stewardship.

Like the ORWRP, the Pecan Creek Wetland Complex will function as a living laboratory—a hands-on research and education space embedded within our urban campus. It will host interdisciplinary studies on wetland ecology, urban water quality, climate resilience, and ecosystem restoration. It will also serve as an outdoor classroom where undergraduate and graduate students engage in experiential learning and independent inquiry, and where K–12 students, families, and community members will participate in immersive outreach and citizen science programming.

Beyond its academic impact, the project directly supports Nebraska's goals for water sustainability, watershed health, and water quality improvement. Pecan Creek is a tributary of the impaired Deadman's Run, and this project will treat urban stormwater through a carefully designed wetland system—returning cleaner water downstream and contributing to Total Maximum Daily Load (TMDL) objectives. The planned monitoring infrastructure and adaptive management strategies will provide valuable long-term data to inform future urban wetland and stormwater projects across the region.

INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
OFFICE OF THE NU VICE PRESIDENT AND IANR HARLAN VICE CHANCELLOR

The University of Nebraska–Lincoln, through IANR, is a full partner in this endeavor. We are deeply committed to its implementation and success. Our faculty are actively shaping its research agenda; our students will be engaged in design, monitoring, and outreach; and our Institute will continue to support the integration of this facility into teaching, scholarship, and community engagement.

We envision this site being used not only for faculty-led research and student learning but also for long-term public engagement, demonstration projects, and adaptive management practices that support the university's mission and community goals.

The Pecan Creek Wetland Complex is not just a wetland restoration project—it is a platform for discovery, a venue for collaboration, and a vital component of Nebraska's long-term water sustainability strategy. On behalf of the University of Nebraska–Lincoln and IANR, I respectfully urge you to support the Water Sustainability Fund application and help bring this visionary project to life.

Sincerely,

Michael J. Boehm
NU Vice President for Agriculture and Natural Resources
UNL Harlan Vice Chancellor of the Institute of Agriculture and Natural Resources

300 Agricultural Hall / P.O. Box 830708 / Lincoln, NE 68583-0708 / (402) 472-2871 / FAX (402) 472-5854

Lincoln **P**ublic **S**chools

5905 O Street, Lincoln, NE 68510 (402) 436-1796

3/27/2025

Nebraska Natural Resources Commission
301 Centennial Mall South
P.O. Box 94676
Lincoln, NE 68509-4676

RE: Deadman's Run - UNL East Campus Wetland Complex Project

Dear Commissioners and Scoring Committee Members,
The Lower Platte South Natural Resources District (LPSNRD) and City of Lincoln have identified an opportunity with University of Nebraska-Lincoln (UNL) to develop a wetland complex on the UNL East Campus property. The wetland will treat flows from the local tributary, Pecan Creek, that routes through East Campus and drains urban stormwater runoff from the City of Lincoln. The project will provide water quality and ecosystem improvements and a research area for collegiate students and faculty, as well as serve an outdoor classroom for education at all levels and an outreach opportunity for local communities.

Lincoln Public Schools (LPS) is in support of this project. As Director of Focus Programs in LPS, I have had the opportunity to be part of discussing potential applications of this wetland complex within LPS. Off-campus experiential learning is important for deeper understanding of our natural world. UNL faculty and LPSNRD staff would provide professional expertise to help engage students on topics. The convenient location would help reduce the challenge of transporting students off-site during the school day. LPS classes and individual student research projects would benefit from hands-on learning in this setting. We encourage you to approve the Water Sustainability Fund application for this project.

Sincerely,

Dr. James A Blake

James A. Blake, Ed.D.
Director of Focus Programs

BIBLIOGRAPHY

PAPIO MISSOURI RIVER NATURAL RESOURCES DISTRICT

HOUSTON engineering, inc.

BIBLIOGRAPHY

City of Lincoln, Transportation and Utilities. 2022. *Lincoln Comprehensive Watershed Master Plan*.
Referenced in Application:
Section C-9

Nebraska Department of Environment and Energy, Water Quality Division. 2022. *Water Quality Integrated Report*.
Referenced in Application:
Section B-9, C-1, C-5, C-7, C-9, C-15

United States Department of Agriculture (USDA). *Guidance for Conducting Analyses Under the Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies and Federal Water Resources Investments, DM 9500-013*.
Referenced in Application:
Section B-3