

# NEBRASKA NATURAL RESOURCES COMMISSION

## Water Sustainability Fund

Application for Funding

### Section A.

#### ADMINISTRATIVE

**PROJECT NAME:** Platte Center Water Quality Improvement Project

#### **PRIMARY CONTACT INFORMATION**

Sponsor Business Name: Village of Platte Center

Sponsor Contact's Name: Jake Jarecki, Chairman

Sponsor Contact's Address: 315 4th Street, P.O. Box 125

Sponsor Contact's Phone: 402-246-2135

Sponsor Contact's Email: pcvillage1@eaglecom.net

1. **Funding** amount requested from the Water Sustainability Fund: \$210,000

**Grant** amount requested. \$210,000

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

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

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

2. **Neb. Rev. Stat. § 2-1507 (2)**

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

**If yes:**

- Do you have a Long Term Control Plan that is currently approved by the Nebraska Department of Environmental Quality? YES  NO

- Attach a copy to your application. N/A
- What is the population served by your project? N/A
- Provide a demonstration of need. N/A
- **Do not complete the remainder of the application.** N/A

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 <input type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
DNR Surface Water Right	N/A <input checked="" type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input type="checkbox"/>
USACE (e.g., 404/other Permit)	N/A <input checked="" type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input type="checkbox"/>
FEMA (CLOMR)	N/A <input checked="" type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input type="checkbox"/>
Local Zoning/Construction	N/A <input type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Cultural Resources Evaluation	N/A <input checked="" type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input type="checkbox"/>
Other (provide explanation below)	N/A <input type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

Well permits from the Lower Platte North Natural Resource District will be required for new source well sustainability project.

4. **Partnerships**

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

The Lower Platte North Natural Resource District (LPNNRD) has endorsed this project as shown in the Support Letter in **ATTACHMENT 1**. The Drinking Water State Revolving Fund operated by Nebraska Department of Environment and Energy will provide necessary loan funds as needed as shown in the Support Letter in **ATTACHMENT 2**.

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

The Village of Platte Center – As the project sponsor, the Village will work closely with all stakeholders to ensure a successful project. The Village also has stake in the project's outcome and has committed to a cost share in the amount of \$140,000 as shown in the Support Letter in **ATTACHMENT 3**. The Nebraska Department of Health and Human Services (NDHHS) will review the project for protection of health and environment from a public water supply system standpoint. The LPNNRD will support the permitting process and continue to monitor and regulate groundwater quality and quantity. Engineers will provide technical assistance as well as directly manage the construction site. The Engineer will also be responsible for design and site observation. Contractors, who possess the skills, knowledge, and experience to carry out the work, will be responsible for the carrying out of the expected project.

5. **Other Sources of Funding**

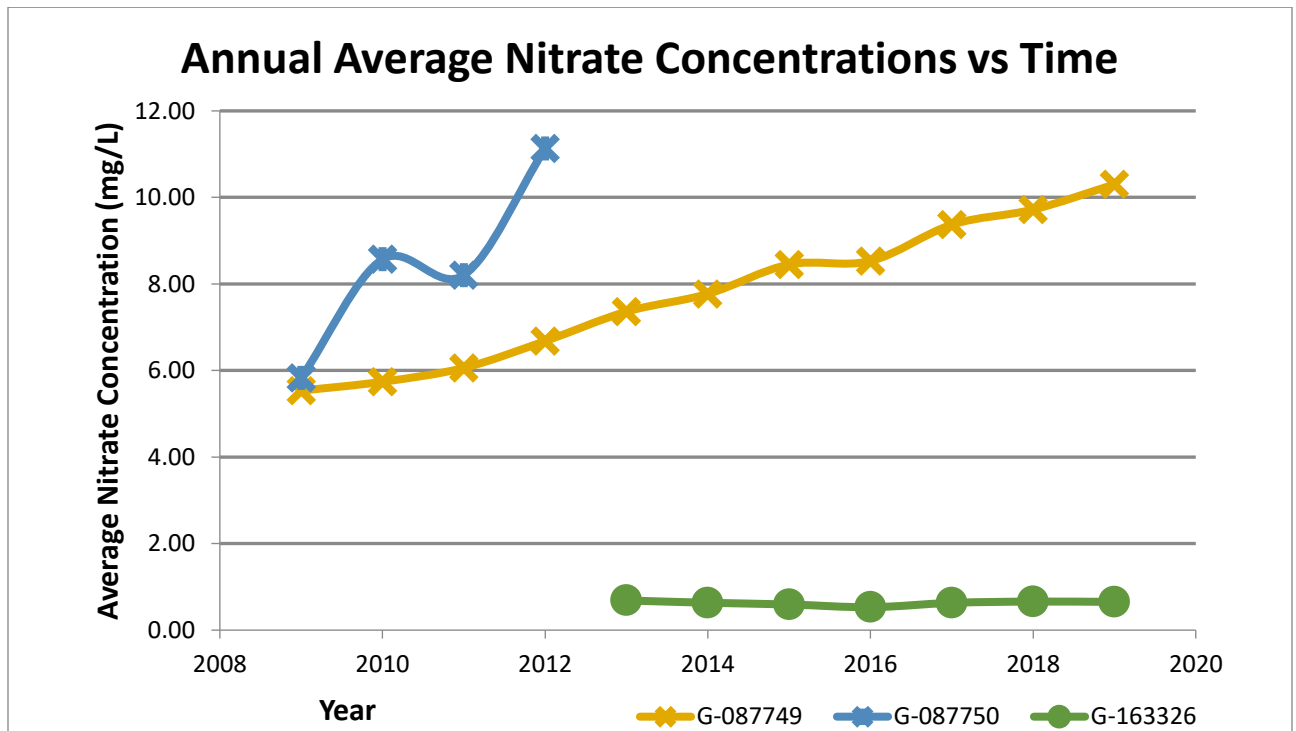
Identify the costs of the entire project, what costs each other source of funding will be applied to, and whether each of these other sources of funding is confirmed. If not, please identify those entities and list the date when confirmation is expected. Explain how you will implement the project if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

The preliminary project cost for the new public water supply well and interconnecting piping is estimated at \$350,000. This cost includes contingencies and engineering design and construction services. To date, the Village has expended approximately \$25,000 of local funds to drill two test hole sites, construct a test well and perform test well pumping which is not included in the project budget. Water quality samples were collected the last week in July and results have not been received yet. The remaining project costs will be funded with Local or Drinking Water State Revolving Loan Funds (DWSRF). The Water Sustainability Funds will be applied to each activity.

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 Village of Platte Center has been proactive and watching the nitrate levels continually increase over the past several years See Nitrate Level graph located below.



Platte Center has three active public water supply wells. These wells are identified as the East Well 37-1 (G-087749), the West Well 78-1 (G-087750) and Well 2011-1 (G163326). The East and West Wells are shallow wells (approximately 100 feet) located on the west part of town adjacent to a flood prevention dike. Public Wells are shown in **ATTACHMENT 4**. The newest well, Well G-163326, is located outside Village limits east of town and is approximately 300 feet deep. The shallow wells are vulnerable to elevated nitrate levels in groundwater, as Platte Center is experiencing, and the federal standard for nitrate in ground water is 10 milligrams per liter (10 mg/l). High nitrates have threatened the sustainability of Platte Center’s Water Supply, and on July 5, 2017, the West Well was placed on emergency use status because of water quality from repeated high nitrate level readings, as high as 11.6 mg/l. The Village entered into a contract with the University of Nebraska and NDHHS for a research project to try to isolate the upper elevated nitrate concentrations from the lower level to reduce the nitrates. The west well was removed from service and the casing was drilled with a specialized tool and a grout cement was injected in the annular space around the well to try to isolate the upper layers of

the aquifer and reduce the nitrate concentrations. To date this effort has been unsuccessful and the east well nitrate concentration has continued to increase. The most recent data from April 22, 2019, shows the East Well nitrate level at 10.5 mg/L. Platte Center's application proposes to address the nitrate contamination of its ground water by locating a new source well. Well G-163326 has demonstrated low nitrate levels (0.6 mg/L), and the Village has identified a potential well site with similar geology of the 2011 well. Locating a new source well with good water quality will increase the sustainability of the Village's water supply, which will increase the quality of life and health of all residents. Mitigating threats to drinking water is identified as a high priority across the State of Nebraska.

7. **Project Tasks and Timeline**

Identify what activities will be conducted to complete the project, and the anticipated completion date.

See **ATTACHMENT 5** to view the Project Task and Timeline.

8. **IMP**

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

Platte Center is part of Lower Platte North Natural Resource District (LPNNRD) and is included in the NRD's Integrated Management Plan.

## 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. The scope of the project involves the installation of a new public water supply well and approximately 500 lineal feet of watermain. A "feasibility report" was not completed for this scope of the project. The feasibility and cost analysis with engineering technical data is provided in the responses listed below addressing Title 261, Chapter 2.
- 1.A.2 Describe the plan of development ([004.01 A](#)); Platte Center's plan is to abandon the two shallow water supply wells and replace the lost capacity with one new source well lower in nitrates. The Village has been observing an increase in Nitrate levels over the past 10 years, and the newest well has stayed relatively stable with low nitrates since the installation in 2011 as shown in **ATTACHMENT 6**. In order to stay in compliance with the State and continue to provide safe water to village residents, an evaluation needed completed on the existing wells to determine if the existing wells could be renovated and the existing casing used through a research project with UNL and NHDSS. This course of action was not successful. Thus, a feasible course of action was needed. The Village Board chose to investigate lower water bearing zones of the aquifer in the vicinity of the 2011 supply well. A plan was developed to drill test holes and a test well to determine if the lower water bearing zones of the aquifer would provide a sufficient volume for supply and satisfactory water quality. Five test sites were selected and NDHHS was requested to do site inspections prior to drilling the test holes. The first test hole (2019-1) did not contain a sufficient amount of water bearing formation to meet the production needs. The second test hole site (2019-2) has a much larger water bearing zone and a test well was constructed at this site. The location of 2019-1 and 2019-2 is shown in **ATTACHMENT 4**. The test hole had a large confining unit from 118 feet to 160 below ground surface (BGS) of a tan clay and then 21 feet of a good water bearing formation. The 6" test well was screened in this water bearing formation and test pumped for 24 hours. The test well produced 250 gallons per minute over the 24 hour period. The final production well is expected to produce 300-400 gpm. The

average consumptive used from a 2006 engineering report using 2001 to 2005 water use data reported an average use 97,100 gallons per day (gpd). This is equivalent to 68 gpm in a 24 hour period. The highest reported day use in July 2005 was 515,000 gallons per day or approximately 357 gpm in a 24 hour period. This well site appears to be acceptable pending water quality. The construction of a new public water supply well adjacent to will provide a long-term solution to the Village's water supply and water quality needs, as wells as have flexibility for future needs. The new source well will be located in an area that has significantly less nitrate levels in the water, and after the new source well and pipeline are complete and in service, the Village will decommission the East and West Wells. Should the nitrate level rise in the future, this site is located such that a blending or treatment would be easily implemented with the 2011 well.

- 1.A.3 Include a description of all field investigations made to substantiate the feasibility report (004.01 B); The Village has performed NDHHS well siting for approval of the test hole sites, hired a licensed well driller to perform test hole and test well drilling and has test pumped and collected water quality at a proposed site.
- 1.A.4 Provide maps, drawings, charts, tables, etc., used as a basis for the feasibility report (004.01 C); The proposed application provides information used in the preliminary development of the new well site. The well registration for Well G-163626 or Well 2011-1 as shown in **ATTACHMENT 7**. This well has demonstrated consistent lower nitrate values and was used as a guide for new well search. This well had 24 feet of a tan clay material and 15 feet of a sandy clay over a water bearing formation. It is this aquitard that we believe is key to finding a lower nitrate well. In order to look at the regional water production, the Nebraska Department of Natural Resources (NDNR) well database was used to identify the surrounding wells and look at well spacing as shown in **ATTACHMENT 8**. This attachment shows the 1000-foot radius area around all registered wells in the Platte Center area (shown in purple). This helps locate areas of potential drilling sites. The well registration numbers are also indicated and wells which produce over 500 gpm were selected and indicated by a yellow plus symbol. Also indicated on this attachment are five sites that were "witched" by the operator. Blue arrows are also shown on this figure and indicate approximate flow direction. As you can see by the yellow pluses, there appears to be a pattern of where higher production wells exist.
- 1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D); The Village has worked with the current landowner on the proposed well site and the land is available for the Village to install the well. The LPNNRD will require a new well permit and as you can see by the letter of support in this application they are behind the development of a new well (shown in **ATTACHMENT 2**). The NDHHS is the regulatory agency protecting the health of the citizens of Platte Center and they will have to issue a construction permit after the necessary design document are submitted to them for review.

- 1.A.6 Discuss each component of the final plan (004.01 E); The final plan includes three main components. Initial site investigation and site selection which is completed. Design and Bidding of the new well and improvements and finally construction of the improvements. This application is for the completion of the last two components.
- 1.A.7 When applicable include the geologic investigation required for the project (004.01 E 1); The geologic investigation included the completion of two test holes, one test well, 24-hr test pumping and collection of water quality screening samples. The test hole log for the selected well site 2019-2 is shown in **ATTACHMENT 9**. The test hole showed 42 feet of a tan clay above 21 feet of fine medium sand with some coarse sand at 160-181. This formation resembles the 2011-1 well. Before the well was cased and test pumped an electric log was run on 2019-2 and this is also included in **ATTACHMENT 10**.
- 1.A.8 When applicable include the hydrologic data investigation required for the project (004.01 E 2); As part of the regional well investigation, saturated thickness information was collected of the surrounding area of Platte Center as shown in **ATTACHMENT 11**. The saturated thickness map shows the wells over 500 gpm, the witched well sites and the saturated thickness by color. The trend is the thickness of the aquifer increases as you go northeast and southwest of the Village. The existing municipal supply wells indicated as red dots show the wells are in the 110-115 foot saturated thickness range. This appears to be close using well 2011-1 well registration information.

Also as part of the regional well investigation, transmissivity of the surrounding area of Platte Center was gathered. Transmissivity is an indicator of yield potential of an aquifer, and **ATTACHMENT 12** delineates transmissivity for the study area. This map was digitized from the CSD UNL and was published in 2005. Transmissivity is a number representing potential yield in thousands of gallons per day per foot. A higher transmissivity would have a potential for higher yielding wells. The transmissivity in the Platte Center study area is consistent at around 50 (50,000 gpd/ft) and does not increase significantly until approximately 5 miles south of the Village.

- 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). The well design will depend on the formation size and the formation thickness. The Thickness was identified in the test hole and samples of the formation material were collected and have been sent to a laboratory for analysis. Once the samples have been sieved, the appropriate design conditions for the screen size, gravel pack material will be designed. The screen will be placed in the lowest water bearing formation and bentonite will be used to seal the annular from the screen up to the sanitary seal at the top of the well. This should ensure minimal water migration down the annual space of the well and minimize nitrate movement into the screen area across the aquitard of tan clay.



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 typically a few alternatives to provide potable water for a community. Blending, consolidation, new source and treatment. Blending will consist of running a dedicated line for the wells which are 41 years and 82 years old to the new well to blend down the nitrates. These wells have lived to the useful life of the wells (typically 50 years) and Well G-087750 has been used for a research project and holes were drilled in the casing. The age of these wells and cost to renovate and install a blending line and controls to get to well 2011-1 would cost over \$500,000. Consolidation with the nearest community that may be able to provide Platte Center water is Columbus which is 9 miles or about 47,500 feet) from the Village. Using an estimated cost of \$40/ft. for water main, valves and air releases, the construction cost for connection to Columbus would be over \$2,000,000 and that does not include annual water purchase. If the Village purchases 100,000 gallons per day on average that would equate to 36.5 million gallons per year. Based on the 2018-2019 water rate for Columbus of \$2.68/1000 gallons and ignoring a monthly service charge per meter that would be a minimum of \$97,000 per year in water purchase. An alternative that is available to the Village for the reduction of nitrate concentrations within the drinking water is the construction of a centralized water treatment facility. As the system is configured now the treatment would be on the two shallow and older wells. Again, concerns of the age and increasing nitrate concentrations is not in favor of this solution. However, according to the EPA there are numerous cost-effective treatment alternatives available for public water supply systems for the removal of nitrates. Treatment methods that EPA has approved are Ion Exchange (IX), reverse osmosis

(RO) and Electro Dialysis (ED). Each process has disadvantages and advantages associated with them. Each of the potential treatment options involve treatment of a portion of the raw water pumped and blending it with the remaining water so that the final blended water meets the MCL for nitrate requirements.

ED is a high energy cost and typically is not considered cost effective for smaller systems. IX has a lower waste percentage however, it requires salt to regenerate the media and disposal of the brine waste is difficult, especially without a large surface water body. Brine disposal can be completed in a separate lagoon system but due to the salt concentration it should not typically be placed in with domestic waste as it will build up over time and hinder the biological treatment system. IX also attracts specific ions in an order called affinity such as sulfate before nitrates. Thus, if sulfates are present they use the exchange capacity of the IX resin before remaining nitrates. Due to the noted concerns, Reverse Osmosis (RO) was briefly evaluated as a treatment alternative for evaluation. With the production of the two wells at around 500 gpm or higher preliminary cost for a 300 gpm RO treatment unit, building and 200 gpm bypass to blend the nitrates down to under 10 mg/L was estimated. The RO treatment system with treatment, building, piping, chemical feed, computer controls, waste disposal, engineering and design was around \$2,800,000. The annual O&M of this system was estimated to be \$75,000 annually. Based on these alternatives the cost for installation of a new source well is the most feasible option.

- 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, up to fifty (50) years; or, with prior approval of the Director up to one hundred (100) years, ([Title 261, CH 2 - 005](#)). Due to the nature of this application a 20 year life cycle is typically used for evaluation. An evaluation of the capital cost, O&M cost and salvage value is used to select the least cost alternative. This analysis takes the present day capital cost adds the present day O&M cost over the 20-year period and deducts the present day salvage value using a uniform discount rate. The discount rate is typically taken from the OMB Circular No A-94. The current discount rate from the 2016 circular is 0.1%. An analysis (shown below) demonstrates the new source is lowest cost option based on a 20-year analysis.

Alternative	Blending Option	New Source	Consolidation W/Columbus	Centralized Treatment RO
<b>Total Capital Cost</b>	500,000	350,000	2,000,000	2,800,000
<b>Annual O&amp;M Cost</b>			97,000	75,000
<b>Present Worth (O&amp;M)</b>	0	0	1,919,800	1,484,400
<b>Salvage Value</b>	300,000	210,000	800,000	560,000
<b>Present Worth (Salvage Value)</b>	294,100	205,800	784,200	548,900
<b>Life Cycle Cost (Net Present Value)</b>	205,900	144,200	3,135,600	3,735,500

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). The estimated cost for the well is presented below.

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST						
PLATTE CENTER WATER SYSTEM IMPROVEMENTS						
PLATTE CENTER, NEBRASKA						
Description		Estimated Quantity	Unit	Unit Price	Total Estimated Cost	
1	Test Well Drilling and Sampling Program	Completed by Village				
2	Construct Well Casing and Screen, Install Deep Well Turbine Pump, Motor, Motor Controls, Wiring, and Interior Piping	1	L.S.	\$150,000	\$150,000	
3	Construct Masonry Well Housing Including Electrical, Mechanical and Site Work	1	L.S.	\$60,000	\$60,000	
4	8" PVC, DR 18 Water Main, (500 L.F. assumed)	1	L.S.	\$20,000	\$20,000	
5	Fittings, Hydrants, and Valves	1	L.S.	\$9,000	\$9,000	
6	Backup power supply	1	L.S.	\$37,500	\$37,500	
<b>Sub-Total Estimated Construction Cost</b>					<b>\$276,500</b>	
7	Contingencies	1	L.S.	\$27,000	\$27,000	
8	Engineering (Design and Construction Services)	1	L.S.	\$41,500	\$41,500	
9	Legal and Publishing, NDHHS Review Fees, Land	1	L.S.	\$5,000	\$5,000	
<b>TOTAL ESTIMATED PROJECT COST</b>					<b>\$350,000</b>	

The annual operation and maintenance cost was not estimated as the Village would be eliminating two wells and installing one new well. The cost for pumping using high efficiency motors and insulated wells house should be less than the current O&M on the two older wells and well houses. The breakdown of the schedule and monthly cost if the application was awarded was provided above Engineer's Opinion of Probable Construction Cost.

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). A life cycle analysis was provided in the Section 3, cost and benefits data narrative.

3.C Present all cost and benefit data in a table to indicate the annual cash flow for the life of the project (005.03). The proposed project (if funded) will rely on the Village water user rates to repay the debt on the system. The award of the \$210,000 in funding from the WSF will reduce the impact to Platte Center by approximately \$5.97 per user per month.

	Village Only Funds	With WSF Funding
Project Cost (Loan Amount)	350,000	140,000
Interest Rate	2.500%	2.500%
Term	20	20
Principal and Interest Payment	(\$22,451.50)	(\$8,980.60)
User Increase per Month (188 users)	(\$9.95)	(\$3.98)

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 lowest cost analysis for a 20 year period was provided above.

**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.

If this application is approved the Village can and intends to secure a Drinking Water State Revolving Loan Funds (DWSRF) for the balance of the project. As part of the loan document requirements, the user rates are required to be raised to cover the cost of the project and provide project reserves.

5. Provide evidence that sufficient annual revenue is available to repay the reimbursable costs and to cover OM&R (operate, maintain, and replace). As stated above the project cost, O&M and a reserve fund will be required as part of the DWSRF program.

6. If a loan is involved, provide sufficient documentation to prove that the loan can be repaid during the repayment life of the proposal. User rates will be increased to cover all cost of the additional loans funding needed.

7. Describe how the plan of development minimizes impacts on the natural environment (i.e. timing vs nesting/migration, etc.). The construction of a new well in the vicinity of the water tower and adjacent to developed land should have minimal impacts to the natural environment. Well drilling actives are performed in a limited space and the well house is typically less impact than a residence. The well will not be constructed in any wetlands and is located farther away from the local stream and

creeks to minimize surface water impacts compared to the wells which will be abandoned.

8. Explain how you are qualified, responsible and legally capable of carrying out the project for which you are seeking funds. The Village of Platte Center is a public water supply with the authority to charge its residences for providing safe drinking water. The Community under the statues of Nebraska has the responsibility and capability to complete this project. The Village operates the public water supply system under NDHHS license number NE-3114101. The Village has contracted with Miller and Associates (M&A) a consulting engineering firm that will provide design and construction oversight of the project. M&A will submit the design and bidding documents to the NDHHS for a construction permit and will coordinate with LPNNRD for well permitting.

9. Explain how your project considers plans and programs of the state and resources development plans of the political subdivisions of the state. The project considers the LPNNRD 2018 Voluntary Integrated Management Plan (IMP) when completing this project. The IMP jointly adopted by the Nebraska department of Natural resources and the Lower Platte North Natural Resource District (LPNNRD) identifies two groundwater development areas at Platte Center. The location of the proposed well site lies in the Special Quantity Subarea (SQS) which has an allocation of groundwater withdrawals and no new irrigated acres. This would be a concern however the LPNNRD is in support of this project. The new public water supply well will assist with the LPNNRD by providing data to add to the database of current ground water geology, assist with water demand inventory by installing a flow meter and reporting the water withdrawal each year and relocation of the well farther form the alluvial aquifer promoting reduced direct use of surface water. The NDHHS would also support the reduction of nitrates being supplied to the customers of Platte Center by the use of a new source well.

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. The well is sited on land owned by Platte Center Development LLC % Rodney G. Hassebrook. The landowner and the Village have reached an agreement to place the well on the un-platted land located northeast of the water tower.

10.B Attach proof of ownership for each easements, rights-of-way and fee title currently held. A copy of the Platte County GIS Assessor parcel information is shown in ATTACHMENT 12.

10.C Provide assurance that you can hold or can acquire title to all lands not currently held. Prior to drilling any test holes the Village approached and agreed to several potential locations for the well. This agreement was

necessary prior to the Village investing \$25,000 in test holes and testing for a new site.

11. Identify how you possess all necessary authority to undertake or participate in the project. Nebraska State Statues allows the municipality the authority to participate in the project.
12. Identify the probable consequences (environmental and ecological) that may result if the project is or is not completed. If safe water is not provided to the citizens of Platte Center, the NDHHS in conjunction of EPA will require the Village to come into compliance or disband the public water supply and all residences will have to drill private wells. The drilling of private wells does not have any water quality oversight and elevated nitrates can cause acute issues by blocking the ability of the body to carry oxygen to the body in infant and the elderly.

## Section C.

### NRC SCORING

#### 1. Remediates or mitigates threats to drinking water;

The Village has concerns about the public water wells' capacity to supply long-term water needs to the rural community of 306 residents, and the increasing nitrate concentrations is a significant threat to the Village's drinking water supply. In the last two decades, two active wells have rising nitrate levels, rising from an average of 5.15 ppm nitrate N in 2000 to 7.82 ppm in 2010. On July 5, 2017, the West Well (Well 78 or G-087750) was placed on emergency use status due to water quality caused from excessive nitrates and has not been placed back into service. In the recent removal of a primary well from the Village's supply system, the system's production capability is now reduced, which could interfere with the Village having an adequate water supply during peak demand and in a fire emergency event. However, the East Well is also showing a similar pattern of increasing nitrates as shown in **ATTACHMENT 6**. A new source well would assist the Village with providing water that complies with quantity and quality regulations and standards, and the adequacy to protect human health. If a new well source is not identified, there will be significant long-term impacts for Platte Center.

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

The Lower Platte North Natural Resource District (LPNNRD) updated its Long Range Implementation Plan Fiscal Year 2019 in 2018, and Platte Center is part of this district. The project has been endorsed by the LPNNRD because the project helps meet the goals of the IMP (see **ATTACHMENT 1**).

Goals that the project benefits are:

- Update policies, practices, and programs to maintain and improve water supply and water quality as it affects supply.
- Evaluate current and project future water demands of all water users to assess instream flow within the district and comply with downstream requirements.
- Evaluate the potential to augment existing supplies by accessing additional waters within and outside of the District, including recharge projects, improving existing and adding new water storage/conveyance infrastructure, or through brackish water supplies.

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

The relocation of a new source well north of the community and elimination of two shallow aquifer wells adjacent to a stream will have short term stream impacts and reduced stream depletion.

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;

Municipal and industrial use: The proposed project provides public drinking water supply that meets water quality standards stated in the Safe Drinking Water Act.

Preservation of water resources: The well replacement preserves water resources for the Village.

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

Using Nebraska’s water resources to benefit domestic users is the highest priority according to Nebraska’s Constitution and State Statutes, followed by agricultural and then industry purposes. The quality of life of residents in Platte Center increases because ground water provides health, fire control, and sanitation benefits. Platte Center’s public water supply provides water to the entire community, including the fire department, government offices, an elementary school, churches, businesses, and households. No beneficial uses will be reduced.

6. Is cost-effective;

A water supply located north of Platte Center would diversify the Village’s water supply sources, thereby increasing reliability.

Due to the nature of this application a 20-year life cycle is typically used for evaluation. An evaluation of the capital cost, O&M cost and salvage value is used to select the least cost alternative. This analysis takes the present day capital cost adds the present day O&M cost over the 20-year period and deducts the present day salvage value using a uniform discount rate. The discount rate is typically taken from the OMB Circular No A-94. The current discount rate from the 2016 circular is 0.1%. The table below is the analysis and demonstrates the new source is lowest cost option based on a 20-year analysis.

Alternative	Blending Option	New Source	Consolidation w/Columbus	Centralized Treatment RO
<b>Total Capital Cost</b>	500,000	350,000	2,000,000	2,800,000
<b>Annual O&amp;M Cost</b>			97,000	75,000
<b>Present Worth (O&amp;M)</b>	0	0	1,919,800	1,484,400
<b>Salvage Value</b>	300,000	210,000	800,000	560,000
<b>Present Worth (Salvage Value)</b>	294,100	205,800	784,200	548,900
<b>Life Cycle Cost (Net Present Value)</b>	205,900	144,200	3,135,600	3,735,500



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

There are no interstate compacts or decrees, or other formal state contracts or agreements that could be affected by the proposed project. The Conservation and Environmental Tool (CERT) was employed for this project. The "Overall Results" stated that potential impacts on listed species may occur as a result of this project and resource agencies shall be contacted for further information. The listed species were the whooping crane, northern long-eared bat, and the small white lady's slipper. Since there is no apparent federal nexus, only the Nebraska Game and Parks Commission (NGPC) was contacted for further information. A response from NGPC is pending.

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;

The fire department provides public health and safety, and the interruption of Platte Center's public water supply would have a debilitating effect on the public security of the area and the public health and safety of residents. The project is a direct benefit for public health, security, and safety, and the fire department's incapacity to suppress fires at the community level would be reduced.

9. Improves water quality;

With elevated nitrate levels in the Village's public water supply, the Village is interested in identifying a new well field in a suitable area. Partnering with Nebraska Department of Environment and Energy (NDEE) and once a new site is located, a wellhead protection area will be designated to prevent contamination of the groundwater supply. Treatment Reverse Osmosis would remove nitrates and other contaminants to provide a finished water that meets all quality objectives; however, this option would be extremely costly to the Village. This option also would waste 25-30% of the water pumped by the nature of the process. This is not in the best interest of water conservation.

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

The local jurisdiction that supports the proposed project is the Village of Platte Center. The match will come from increased user rates to repay the remaining loan of the project. The award of the \$210,000 in funding from the WSF will reduce the impact to Platte Center by approximately \$5.97 per user per month.

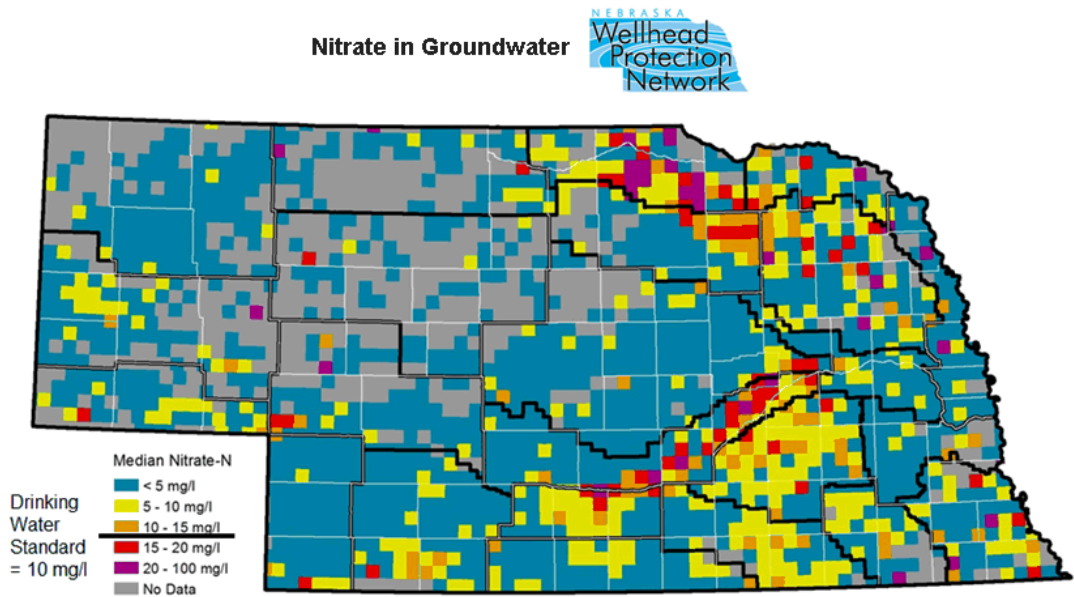
	City Only Funds	With WSF Funding
Project Cost (Loan Amount)	350,000	140,000
Interest Rate	2.50%	2.500%
Term	20	20
Principal and Interest Payment	(\$22,451.50)	(\$8,980.60)
User Increase per Month (188 users)	(\$9.95)	(\$3.98)

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

The LPNNRD has statutory responsibility to support water supply for any beneficial uses along with developing, managing, utilizing, and conserving groundwater and surface water, which are hydraulically connected. The district also provides programs to protect water quality since the Platte Center area relies on groundwater as the primary source of drinking water.

12. Addresses a statewide problem or issue;

The State of Nebraska has a growing Nitrate problem as shown in the map below from the Nebraska Groundwater Quality Management Report. The Village is taking preventative measures to stay in compliance with the State as well as making sure the community has safe reliable drinking water.



Source: NDEQ, 2016 Nebraska Groundwater Quality Monitoring Report

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;

Through the Nebraska Natural Resources Commission, Water Sustainability Funds will contribute to 60% of the project cost, or \$210,000. The Drinking Water State Revolving Fund operated by Nebraska Department of Environment and Energy will provide necessary loan funds for the balance of the project, or \$140,000. See the Funding Matrix shown below. See **ATTACHMENTS 2 and 3** to view the match commitment letters.

<b>PLATTE CENTER FUNDING MATRIX</b>		
<b>FUNDING SOURCE</b>	<b>%</b>	<b>\$</b>
Nebraska Natural Resources Commission	60%	\$210,000
Drinking Water State Revolving Funds	40%	\$140,000
<b>TOTALS</b>	<b>100%</b>	<b>\$350,000</b>

14. Contributes to watershed health and function;

The project site is located within the Shell Creek watershed in the Lower Platte-Shell hydrologic unit (10200201), which is part of the larger six-digit Lower Platte hydrologic unit (102002). Because the replacement well is not expected to increase water consumption by the Village of Platte Center, the project is not expected to reduce flows in Shell Creek or the Platte River. In summary, the project is not expected to adversely affect watershed health.

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

The Nebraska Department of Natural Resources provides a 2018 Annual Report and Plan of Work for the State Water Planning and Review Process. The following objectives are intended to be met by the following explanations:

Objective 1. Maintain data, information, and analysis capabilities for water planning, including specific programs for collecting, maintaining, and distributing information on stream flows, as well as analyzing water uses and water supplies across the state.

The project provides additional water quality information in the Shell Creek watershed for public drinking water supplies.

Objective 3. Support locally developed water management plans for conjunctively managing hydrologically connected groundwater and surface water supplies.

The project supports the LPNNRD’s 2018 Voluntary Integrated Management Plan.

**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:

As a public water system, Platte Center's PWS must comply with the Safe Drinking Water Act (SDWA), a law passed to protect public health by regulating the nation's public drinking water supply. The SDWA provides federal laws and standards for drinking water quality.