

NEBRASKA NATURAL RESOURCES COMMISSION

Water Sustainability Fund

Application for Funding

Section A.

ADMINISTRATIVE

PROJECT NAME: City of Peru Long-Term Water Supply and Flood Resiliency Project

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

Sponsor Business Name: City of Peru, Nebraska (City)

Sponsor Contact's Name: David Pease

Sponsor Contact's Address: 614 5th Street

Sponsor Contact's Phone: 402.872.6685

Sponsor Contact's Email: peru_cityoffice@windstream.net

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

Grant amount requested. \$ 2,441,400

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

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

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

2. **Neb. Rev. Stat. § 2-1507 (2)**

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

If yes:

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

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

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

G&P - T&E consultation (required)	N/A <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 type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" 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 type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Other (provide explanation below)	N/A <input type="checkbox"/>	Obtained: YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

The required permits for the project shall include a US Army Corps of Engineers (USACE) 404 permit, which will include a Nebraska Department of Environment and Energy (NDEE) 401 Certification, G&P T&E consultation, and cultural resources evaluation; a NDEE National Pollutant Discharge Elimination System (NPDES) general permit; a Nebraska Department of Natural Resources (NeDNR) groundwater transfer permit; a construction permit from the Nebraska Department of Health and Human Services (NDHHS); Nemaha County right of way occupancy permit; Nebraska Department of Transportation (DOT) right of way occupancy permit; building, electrical, and demolition permits; and Nemaha County floodplain and zoning approvals. Permits will be obtained during the design phase of the project. WSF will cost share the necessary permits.

Table 1: Estimated Permit Costs and Dates

Permit	Cost	Permit Submittal Date	Permit Approval Date
USACE Section 404 Permit	\$10,000	Mar 2021	Dec 2021
G&P T&E Consultation	Included with USACE Permits		
Cultural Resources Evaluation	Included with USACE Permits		
Building/Electrical/Demolition	Included with construction costs	By Contractor	
NeDNR Groundwater Transfer Permit	\$15,000	Mar 2021	Aug 2021
Nemaha County Floodplain and Zoning	\$1,320	July 2021	Sept 2021
Nemaha County ROW Occupancy Permit	\$660	July 2021	Sept 2021
Nebraska DOT ROW Occupancy Permit	\$660	July 2021	Sept 2021
NDHHS Construction Permit	\$7,600	July 2021	Sept 2021
NPDES Permit	\$3,000	July 2021	Aug 2021
Permits Total	\$38,240		

4. **Partnerships**

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

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

City of Peru

The City of Peru (City) is the project Sponsor and fully supports the project. The City held a public meeting on July 20, 2020 to engage stakeholders regarding the scope and cost of the Long-Term Water Supply and Flood Resiliency Project (project) and the Memorandum of Understanding (MOU) with Auburn BPW. The proposed project consists of a connection between the City’s water system and the Auburn Board of Public Works (BPW) water system. The MOU was unanimously approved by City Council. The City has included a Letter of Support for the proposed project in Attachment A, which includes all financial and legal commitments necessary to complete the proposed project.

Federal Emergency Management Agency (FEMA)

The City of Peru has several projects being processed for potential funding through the FEMA Public Assistance (PA) Program as a result of the 2019 Missouri River flood event. PA funding from FEMA is based off the cost to restore all damaged infrastructure to pre-disaster design, capacity and function plus codes and standards upgrades. The PA funding process is not competitive and PA grant funding for the proposed water project will not be impacted by the other projects.

The City is maintaining weekly communication with FEMA regarding the status of these projects and the new long-term water supply project. It is anticipated that FEMA will be a funding partner contributing to the costs associated with planning, engineering, design, permitting and construction of the new long-term water supply project. While a final FEMA cost share determination has not yet been finalized, the project is expected to proceed to obligation.

Nebraska Emergency Management Agency (NEMA)

NEMA works with FEMA to provide aid following major disasters events. NEMA has been meeting weekly with the City since the March 2019 flood to provide the community support from the state level during the flood damage recovery process. It is anticipated that NEMA will be a funding partner contributing to the costs associated with planning, engineering, design, permitting and construction of the new long-term water supply project. While a final NEMA cost share determination has not yet been finalized, the project is expected to proceed to obligation.

Auburn Board of Public Works (Auburn BPW)

The City of Peru's water system is currently operated and maintained by Auburn BPW staff. Auburn BPW staff monitor and maintain the majority of the water system including the distribution system, wells, treatment system, storage tanks, and control systems. Auburn BPW is partnering with the City to reduce the risk of flood damage to the community's water supply and treatment system by co-signing a Memorandum of Understanding (MOU) with the City of Peru for Auburn BPW to provide treated water through a new water connection to the City of Peru. This MOU outlines the roles and responsibilities associated with the construction, operation, and maintenance of a water connection with the City. The executed MOU is included in Attachment A. Auburn BPW has endorsed this project through a Letter of Support, which is included as Attachment A. Auburn BPW is not a funding partner.

Peru State College

Peru State College is the largest economic driver and largest water customer within the City. Additionally, Peru State College provides an everlasting impact to the community as its graduates use their education to better their communities, State, and beyond. Peru State College has endorsed this project through a Letter of Support, which is included as Attachment A. Peru State College is not a funding partner.

Nebraska Department of Health and Human Services (NDHHS)

NDHHS administers the Nebraska Drinking Water State Revolving Fund (DWSRF) program, which provides low interest loans to owners of public drinking water systems. The City plans to utilize the DWSRF to fund their cost share of the project, and NDHHS has endorsed the project through a Letter of Support, which is included as Attachment A.

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 City is nearly ready to begin the design process for the new long-term water supply project and is requesting financial support from the Water Sustainability Fund to cost share the design, permitting, and construction of the project.

It is anticipated that FEMA and NEMA will provide combined grant assistance in an amount between \$1.0M and \$3.0M for the proposed project. However, while FEMA and NEMA have indicated that the project is eligible for grant funding through their federal and state programs, respectively, they were not able to commit to a specific dollar amount before the WSF application was due. Therefore, for the purposes of this application, it is assumed that FEMA and NEMA will contribute a combined \$1.0M of grant funding towards the costs of the proposed project. If FEMA and NEMA provide grant funding in excess of \$1.0M, then the request for financial support from the WSF Program will be proportionately reduced. If the funding sources identified below do not materialize, the City will consider seeking additional sources of grant funding or increase the DWSRF loan amount to complete the project.

Table 2: Project Cost and Funding Source Breakdown

	Cost Estimate	FEMA/NEMA Share	Remaining Costs	WSF Grant Request	Local Cost Share
				60%	40%
Engineering Design and Construction Services	\$667,000	\$131,584	\$535,416	\$321,250	\$214,166
Permitting	\$38,240	\$7,544	\$30,696	\$18,418	\$12,278
Other Professional Services (Administrative, Legal, Fiscal, etc.)	\$128,760	\$25,401	\$103,359	\$62,015	\$41,343
Land Easement Acquisitions	\$150,000	\$29,592	\$120,408	\$72,245	\$48,163
Connection Fee to Auburn BPW	\$750,000	\$147,958	\$602,042	\$361,225	\$240,817
Construction of Long-Term Water Supply System	\$3,335,000	\$657,921	\$2,677,079	\$1,606,248	\$1,070,832
TOTAL	\$5,069,000	\$1,000,000	\$4,069,000	\$2,441,400	\$1,627,600

6. **Overview**

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

The City of Peru (City) is operating a temporary municipal water system to provide drinking water to its customers after the crippling effects of the 2019 flood event. A connection to the Auburn Board of Public Works (BPW) water system has been identified as the most cost effective and sustainable solution to the City's long-term water supply needs. The goal of this project is to provide the City, including Peru State College, with a long-term, high-quality, and sustainable water source. It will also promote flood resiliency by removing critical infrastructure from the Missouri River floodplain.

The City's municipal water system provides safe drinking water to over 994 residential and commercial customers, including students and faculty of Peru State College, which accounts for approximately 45% of the City's total water usage and is the largest economic driver within the community.

As a result of the 2019 Missouri River flooding, the City's existing water treatment plant and water supply wells were severely damaged and left inoperable, as can be seen in the March 2019 Flood Damage Assessment included in Attachment B. As an emergency measure, the City continually hauled treated water by the truckload from the City of Auburn to the City's distribution system from March 2019 to July 2019. To reestablish a functional water supply to the community, the City has temporarily rehabilitated a single water supply well and constructed a temporary water treatment facility located outside of the floodplain. The temporary treatment facility is designed to operate through the end of 2022, by which time a permanent treated water source will need to be operational.

The 2019 Missouri River flooding events breached an earthen levee that provided flood protection to the northern portion of the community, where the City's existing water supply wells, water treatment plant, and wastewater treatment lagoons are all located. The U.S Army Corps of Engineers has determined that the levee is not currently eligible for repair or rehabilitation. Without the levee protection, the City's critical water and wastewater infrastructure systems are susceptible to flood damage from 10-year recurrence interval and greater flood events. Regardless of the future rehabilitation status of the levee, the existing water and wastewater facilities will remain within the regulated floodplain and localized flood protection will be required for each facility.

Therefore, in order to achieve a sustainable water supply and treatment system, the City will need to provide localized flood protection for their facilities, if rehabilitated, or relocate their facilities outside of the floodplain of the Missouri River.

An engineering analysis of the available alternatives concluded that the most cost effective and sustainable means of providing an adequate supply of high quality water to the City is to build a new 8-inch water transmission main between the City and the City of Auburn. totaling approximately 11-miles in length, and purchasing treated water from Auburn BPW.

The primary purpose of the proposed project is to provide safe and reliable drinking water that can be sustained through future Missouri River flooding events. Additionally, the project will alleviate several water quality treatment issues the community typically faces. The City currently draws water from the Missouri River alluvial aquifer, which provides a sufficient quantity of water but has poor water quality with high concentrations of iron and manganese that must be removed before it is made available for public consumption. Even after treatment, customers (including students and faculty of Peru State College) complain of discolored water from the levels of minerals that remain in the water after treatment. On occasion, Peru State College has even provided its own, secondary water treatment to alleviate these ongoing water quality issues. Furthermore, the decommissioning of the existing water treatment plant will eliminate negative environmental impacts caused by the discharge of harmful backwash water to the receiving stream network generated from the existing water treatment process.

Alternatively, Auburn BPW draws its water supply from the Little Nemaha alluvial aquifer, which has less harsh water quality and will lessen the water quality burdens and complaints experienced by the City and College. This will improve overall satisfaction of the water supply within the community. Auburn BPW has demonstrated an ability to consistently remove iron and manganese from their water supply and provide high quality drinking water to its customers for decades. Additionally, the Auburn BPW water supply wells are all elevated out of the floodplain and not susceptible to damage and loss of service during 100-year flood events.

Furthermore, Auburn BPW is already contracted by the City to operate and maintain the City's water and wastewater treatment systems, and this project will further simply those operations for the City.

7. **Project Tasks and Timeline**

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

Table 3: Project Tasks and Timeline

Tasks	Year 1	Year 2	Total Amount
	2021	2022	
Engineering Design & Bidding	\$517,000		\$517,000
Permitting	\$38,240		\$38,240
Other Professional Services (Administrative, Legal, Fiscal, etc.)	\$64,380	\$64,380	\$128,760
Land Easement Acquisitions	\$150,000		\$150,000
Engineering Construction Services		\$150,000	\$150,000
Connection Fee to Auburn BPW		\$750,000	\$750,000
Construction		\$3,335,000	\$3,335,000
TOTAL COSTS	\$769,620	\$4,299,380	\$5,069,000

The City is requesting financial support from the Water Sustainability Fund for the design and eventual construction of a long-term water supply system. It is anticipated that construction of the long-term water supply system will be completed and fully operational by the end of 2022.

Auburn BPW constructed a new water treatment facility in 2011 to upgrade their treatment capabilities and increase their service capacity beyond their existing demands. The connection fee to Auburn BPW includes the costs associated with taking up a significant portion of their increased service capacity, which came at a cost of building a larger treatment facility in 2011 than required by their own water demands. This flexibility was pre-built in order to service future communities like the City of Peru, and this fee is to pay for an equitable share of the construction costs to pre-build the excess treatment facility capacity, proportional to the capacity to be indefinitely used by the City.

8. **IMP**

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

The City of Peru is within the Nemaha Natural Resources District which initiated its IMP in 2019. The first stakeholder meeting is scheduled for July 2020.

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

- 1.A.1 Insert a feasibility report to comply with Title 261, Chapter 2, including engineering and technical data;

The City of Peru (City) hired JEO Consulting Group (JEO) to produce a water system study to evaluate their existing water supply and treatment system in May 2011. An amendment to that study was completed by JEO in June 2019 to provide an up to date evaluation of their existing facilities. A technical memo was also prepared and completed by JEO in October 2019 to supplement the amendment's findings with a more fully realized flooding impact, and to incorporate the results of a hydrogeological review of area groundwater conducted by Leonard Rice Engineers (LRE). The 2019 water study amendment and 2019 technical memo are both included in Attachment B.

- 1.A.2 Describe the plan of development ([004.01 A](#));

The 2019 Missouri River flooding damage left the City's existing water treatment plant and water supply wells inoperable. Additionally, the earthen levee that protected those facilities was breached and deemed ineligible for repair and rehabilitation by the US Army Corps of Engineers. The City is now faced with the development that their critical water and wastewater treatment facilities will no longer be protected from 100-year flooding events, and that their facilities are now susceptible to flooding damage from events with a recurrence interval of greater than once every 10 years.

The City has proactively evaluated an exhaustive list of alternatives to providing safe and reliable water supply and treatment to their community, including area groundwater investigations for alternative water supply sources, an evaluation of several treatment technologies capable of treating the City's harsh raw water conditions, and an evaluation of all available connections to local water treatment distribution systems. Ultimately, the analysis concluded that the most cost effective and sustainable means of providing treated water to the City would be to build a new 11 mile, 8-inch water transmission main between the City and the City of Auburn, purchasing treated water from Auburn Board of Public Works (BPW).

The Auburn BPW wellfield and water treatment plant are elevated above and/or outside of the floodplain and not susceptible to flood damage and loss of service during 100-year flood events.

With the preliminary engineering evaluation completed and co-sponsor support secured, the City is prepared to begin the preliminary design stages of the project. The design, permitting, bidding, and award of the construction contract is anticipated to be completed by winter of 2021. Construction of the long-term water supply system is anticipated to be completed by the end of 2022, to match the end of the temporary treatment facility design life.

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

Field evaluations completed as part of the preliminary engineering evaluations are described as follows:

- A flood damage assessment was performed by JEO in May 2019, when flood waters temporarily receded.
- A temporary water treatment facility was designed by JEO to reestablish a functional water supply for the City, which included several field investigations to monitor the raw and treated water conditions.
- A hydrogeological review of area groundwater was conducted by LRE in 2019 and incorporated into the 2019 JEO technical memo. The findings of that report were utilized during the water supply well feasibility evaluations to determine anticipated water supply conditions.
- Desktop topographic analysis software was utilized to analyze the elevation profiles for the proposed connections to other regional water distribution systems. The results were used to determine the feasibility of several water transmission main routes and to develop higher confidence opinions of cost.
- Topographic survey was conducted to define critical elevations of the existing water supply wells and water treatment plant, in order to evaluate the flood risks to those facilities.
- FEMA Environmental and Historic Preservation (EHP) staff conducted a desktop review of the proposed water transmission main alignment between the City of Peru and the City of Auburn and determined that there were no known environmental or historic conflicts.

Field evaluations planned as part of the design process are described as follows:

- Area soil conditions are known to be suitable for the installation of water transmission mains due to the presence of other buried utilities in the area at similar depths. However, a geotechnical evaluation of the water transmission main alignment will be conducted to provide site specific trench design information.
- Detailed topographic survey along the proposed water main alignment.
- A wetland field delineation will be completed for the entire waterline alignment. Initial desktop reviews already completed have shown that the

project will have minimal impacts, with most being temporary, and a Nationwide Permit will be applicable.

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

The City's water supply wells, water treatment facility, and wastewater treatment lagoons are located within the Missouri River floodplain. A preliminary draft of the updated (8/2/2019) Flood Insurance Rate Map (FIRM) for the project area was utilized when determining the risk of future flood damage to the existing facilities along the Missouri River. The draft FIRM includes specific 100-year flood elevations and floodway delineation. A snapshot of this FIRM is included in Figure 1. The FIRM has been zoomed in to Peru and the surrounding area with critical facilities labeled, for clarity. The entire preliminary FIRM is included in Attachment B.

In reviewing the FIRM map, it is clear that the existing water supply and water treatment facilities are located within the designated 100-year floodplain of the Missouri River. The 100-year flood elevation for the area is 912', whereas the floor elevation of the water treatment plant and the elevation of the top of the water supply wells are 906', 906', and 911', respectively. Thus, the existing water supply and water treatment facilities are several feet below the 100-year floodplain elevation and are at risk of damage from future 100-year flood events. Additionally, without the flood protection from the earthen levee, the water treatment plant and one of the water supply wells are subject to flood damage from as frequent as 10-year flooding events, which have an elevation of 908'.

The historical flood protection provided by the earthen levee to the water supply wells and water treatment plant prior to the 2019 flooding events, with the earthen levee still intact, is illustrated in Figure 2.

The present-day levee, which is completely breached and provides no flood protection to the community, is illustrated in Figure 3.

Additionally, aerial imagery of the levee is shown in Figures 4, 5, and 6 for the pre-flood, during the flood, and post-flood conditions of the levee, respectively.

Figure 1: City of Peru Existing Infrastructure and Floodplain Map

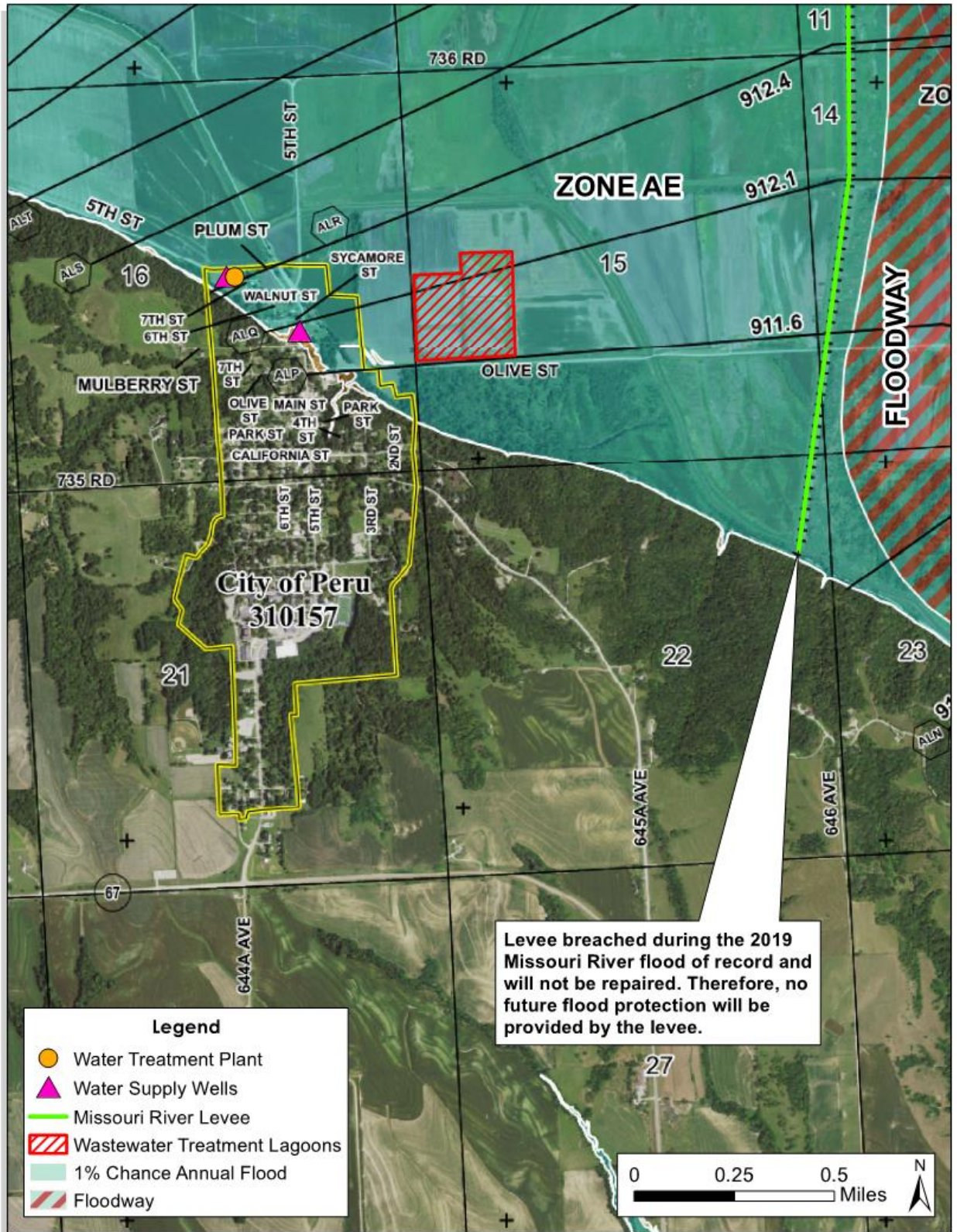


Figure 2: Pre 2019 Flooding Conditions

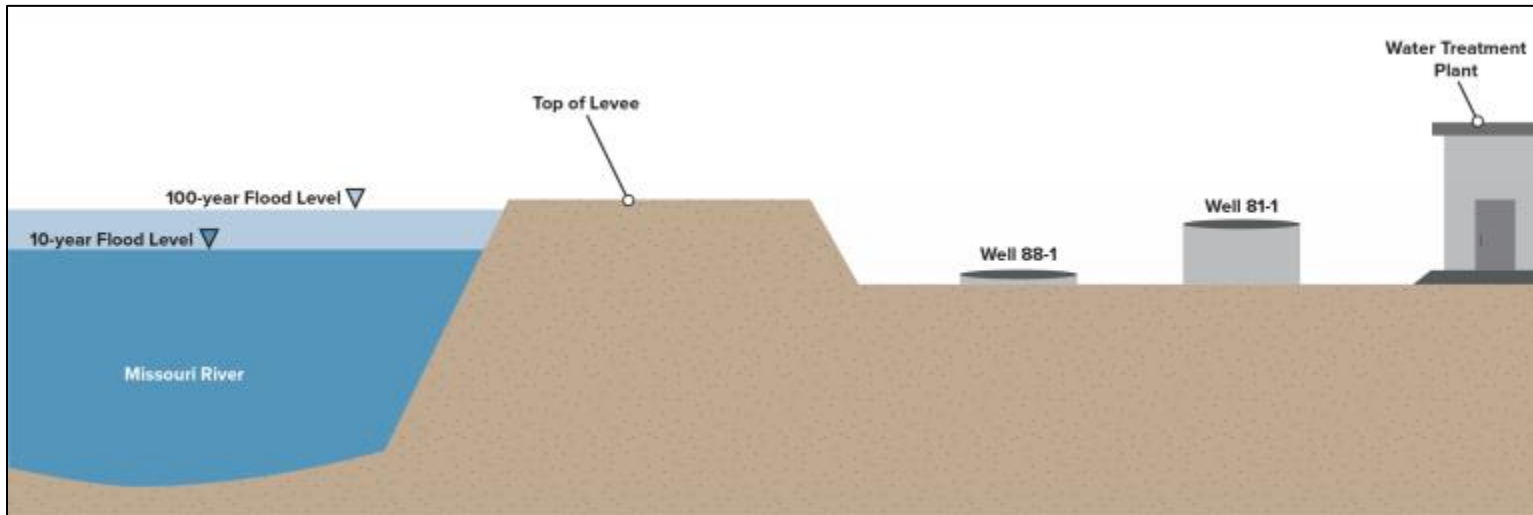


Figure 3: Post 2019 Flooding Conditions

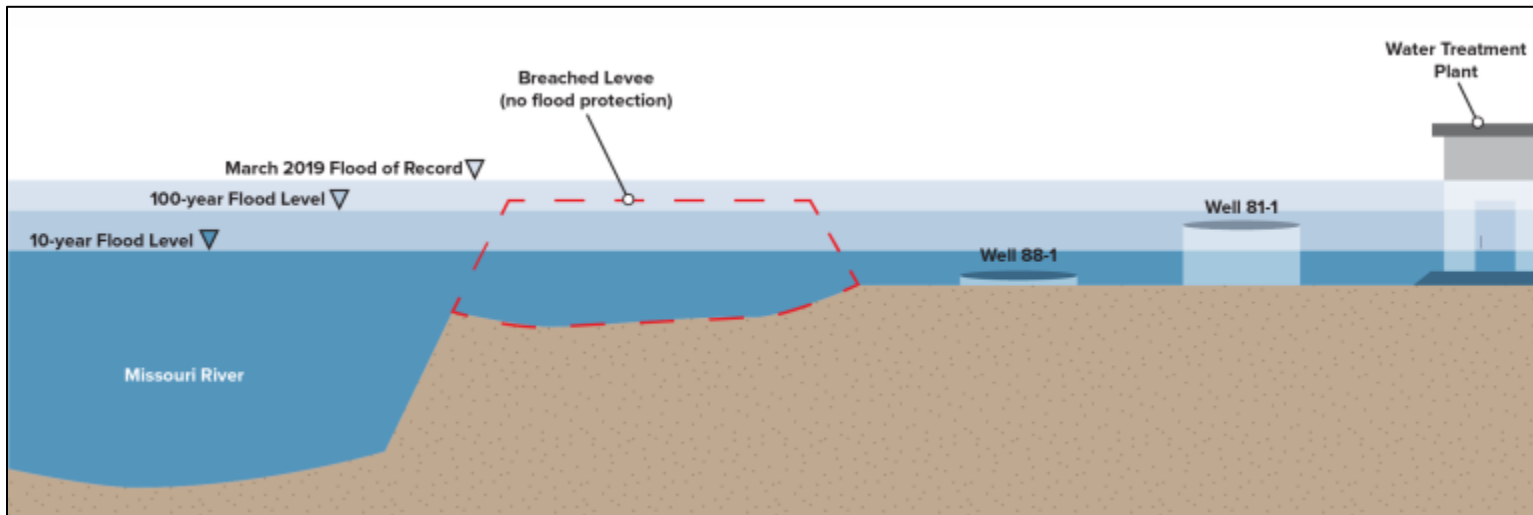


Figure 4: Aerial Imagery of the Missouri River Levee (Pre-2019 Flooding)

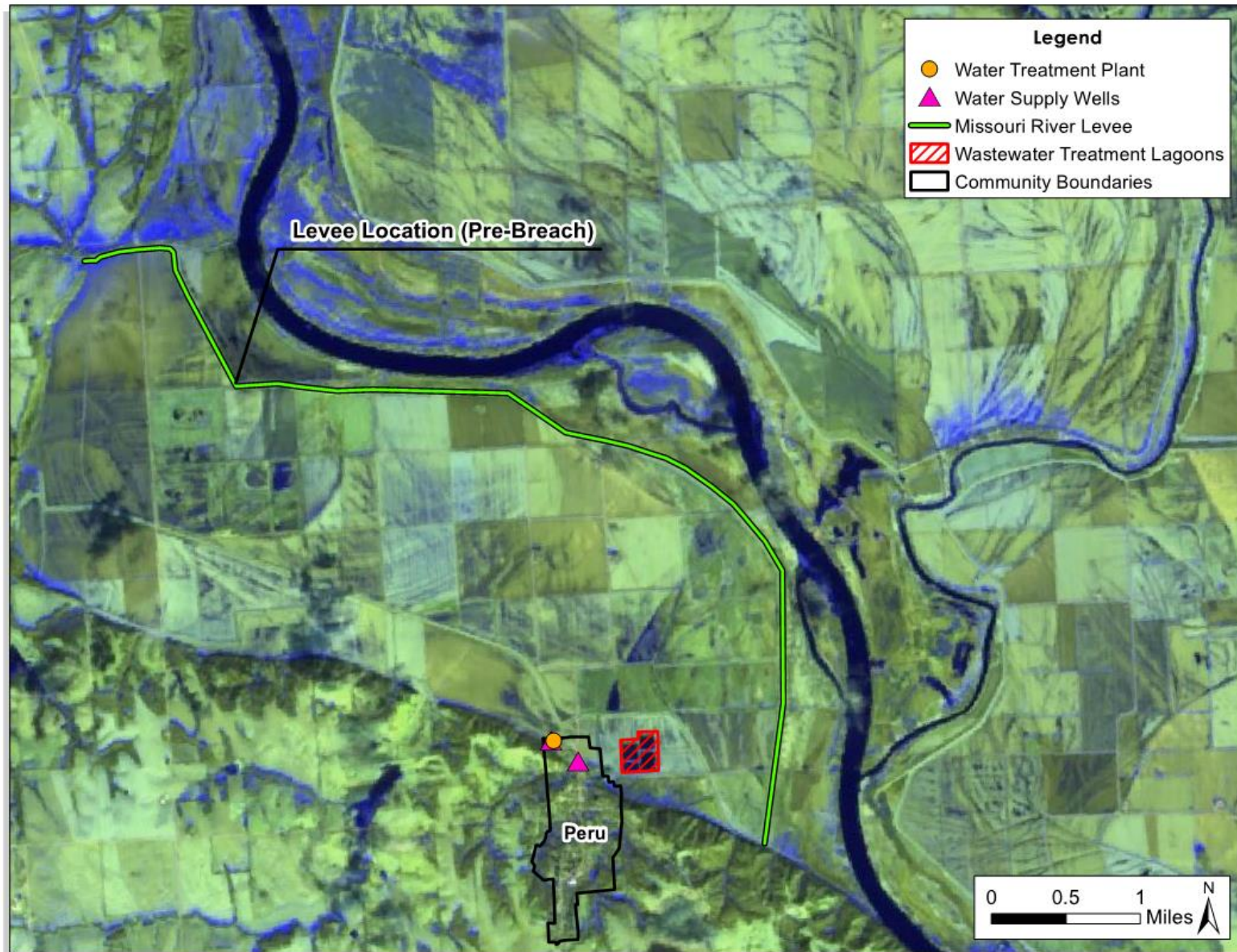


Figure 5: Aerial Imagery of the Missouri River Levee (March 2019 Flooding)

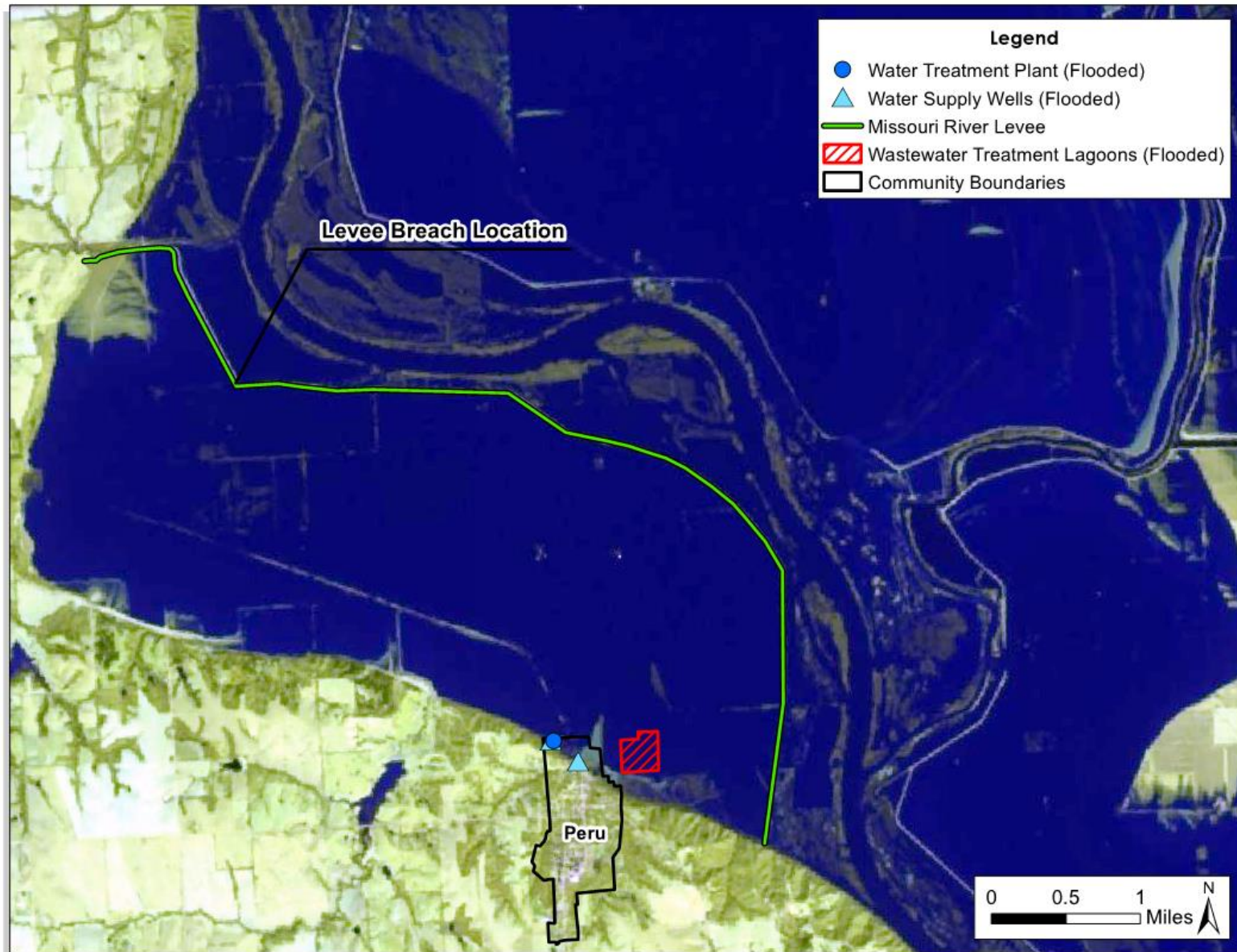
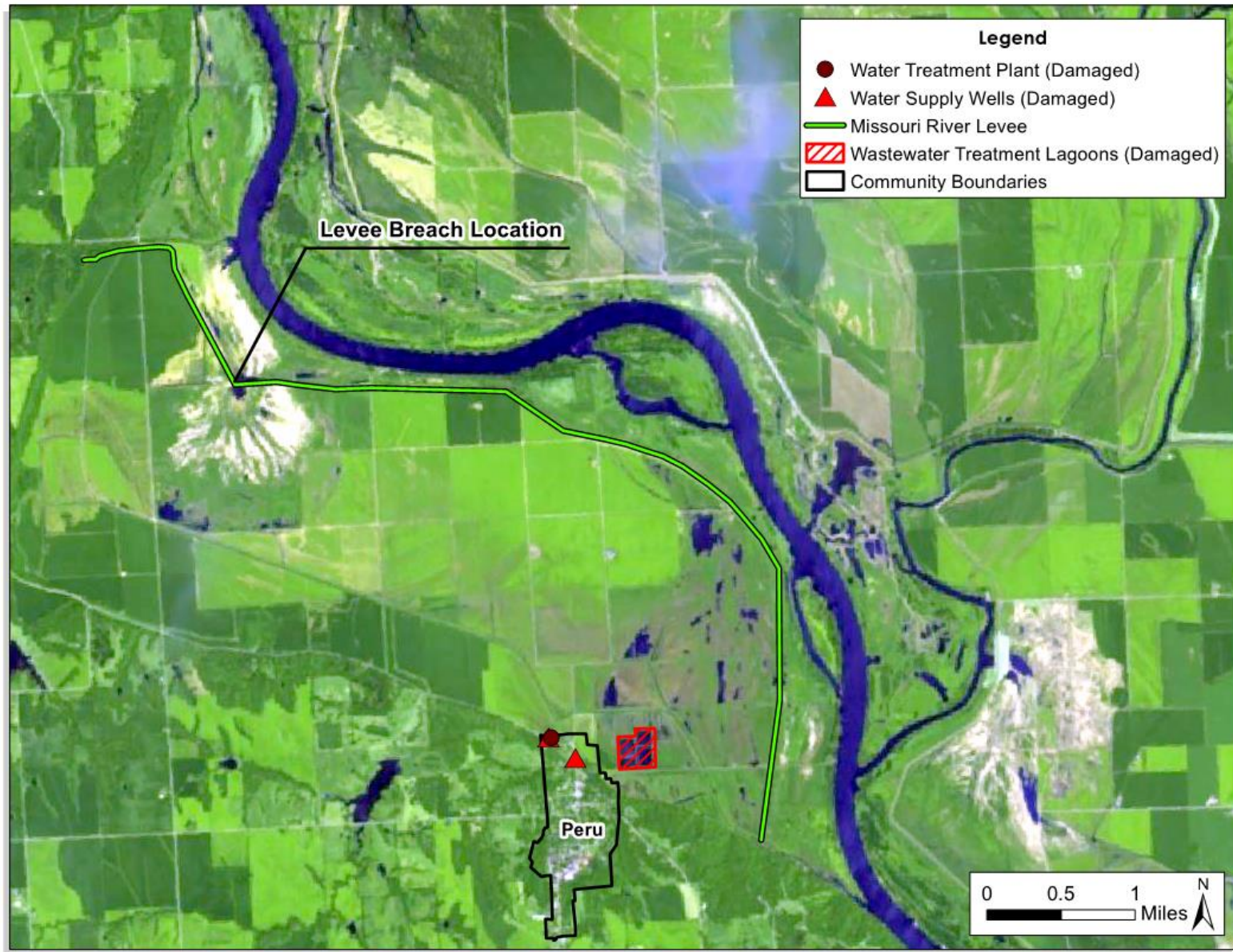


Figure 6: Aerial Imagery of the Missouri River Levee (Post-2019 Flooding)



The City has historically poor groundwater conditions with high levels of both iron and manganese. The aeration and filtration systems in the existing water treatment facility are primarily designed to reduce iron and manganese levels in the drinking water system to below the secondary maximum contaminant levels (SMCLs) recommended by the United States Environmental Protection Agency (EPA). The SMCLs for iron and manganese are 0.3 mg/l and 0.05 mg/l, respectively, and are non-mandatory guidelines used to assist water systems with managing drinking water for aesthetic considerations, such as taste, color, and odor. However, in 2004, the EPA set a manganese health advisory (HA) level of 0.3 mg/l for both chronic and acute exposure for infants younger than 6 months old. This health advisory level is meant to serve as technical guidance to assist regulatory officials with protecting public health and provides practical guidelines for addressing manganese contamination and is recognized and enforced by the state of Nebraska. The raw water quality for the City’s two water supply wells, Well 81-1 and Well 88-1, are shown in Table 4.

Table 4: City of Peru - Existing Raw Water Quality

Parameter	Unit	Well 81-1	Well 88-1	*EPA Limits/Guidelines	
Iron	mg/L	3.42	11.1	0.3	SMCL
Manganese	mg/L	0.54	0.58	0.05	SMCL

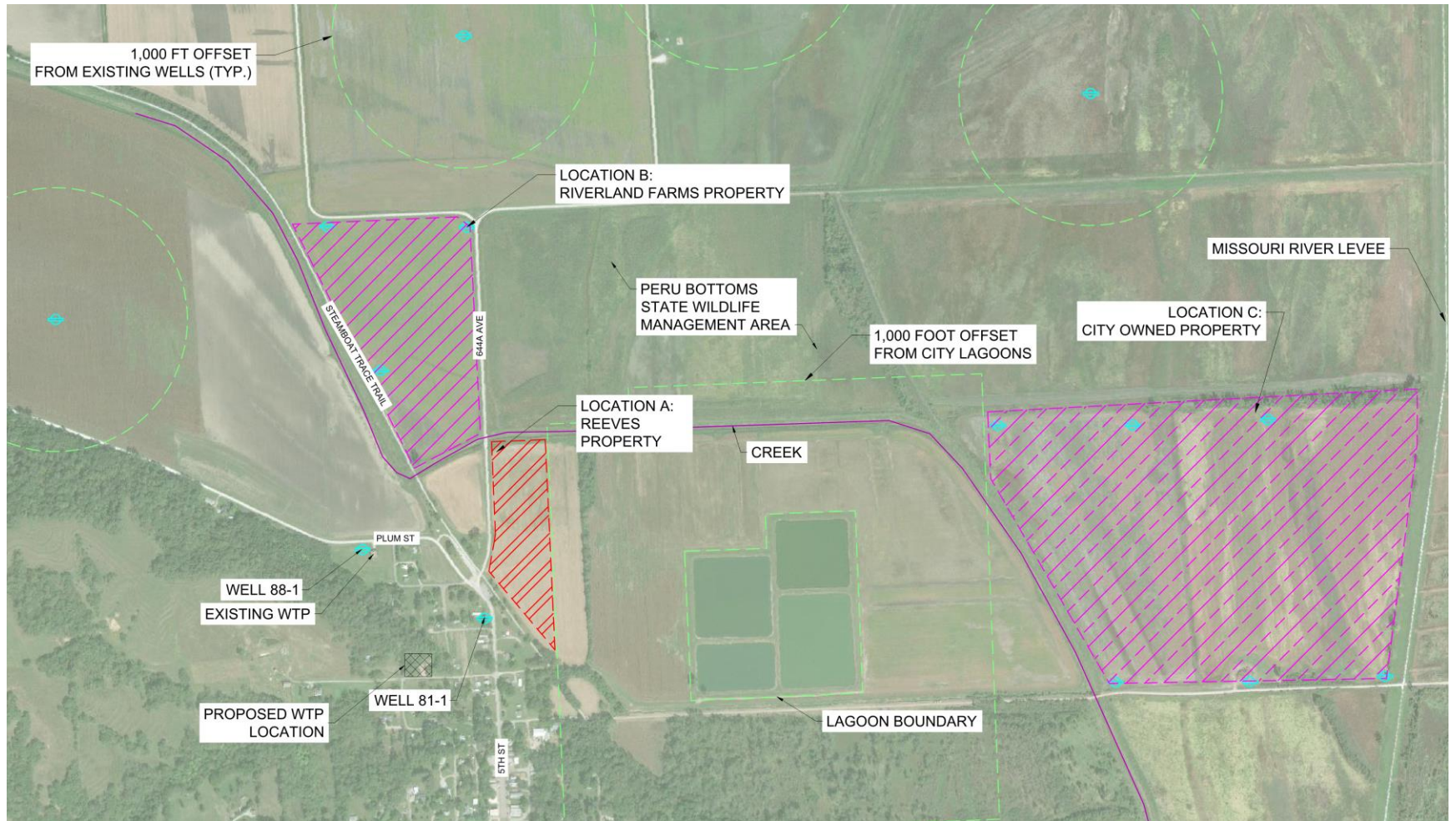
*SMCL – Secondary Maximum Contaminant Level

Additionally, the high levels of Iron and Manganese that are removed from the water and released during the backwash process have stained the creek banks at the back-wash discharge location. This has become an ongoing water quality concern for NDEE and will be rectified with the implementation of the proposed project.

Based on LRE’s hydrogeological review of groundwater in the area, the only viable locations for new City wells are within the Missouri River alluvium, north and east of the existing wells, as illustrated in Figure 7 locations A, B, and C. The results of the hydrogeological investigation concluded that a higher quality water supply should not be anticipated from the new water supply wells.

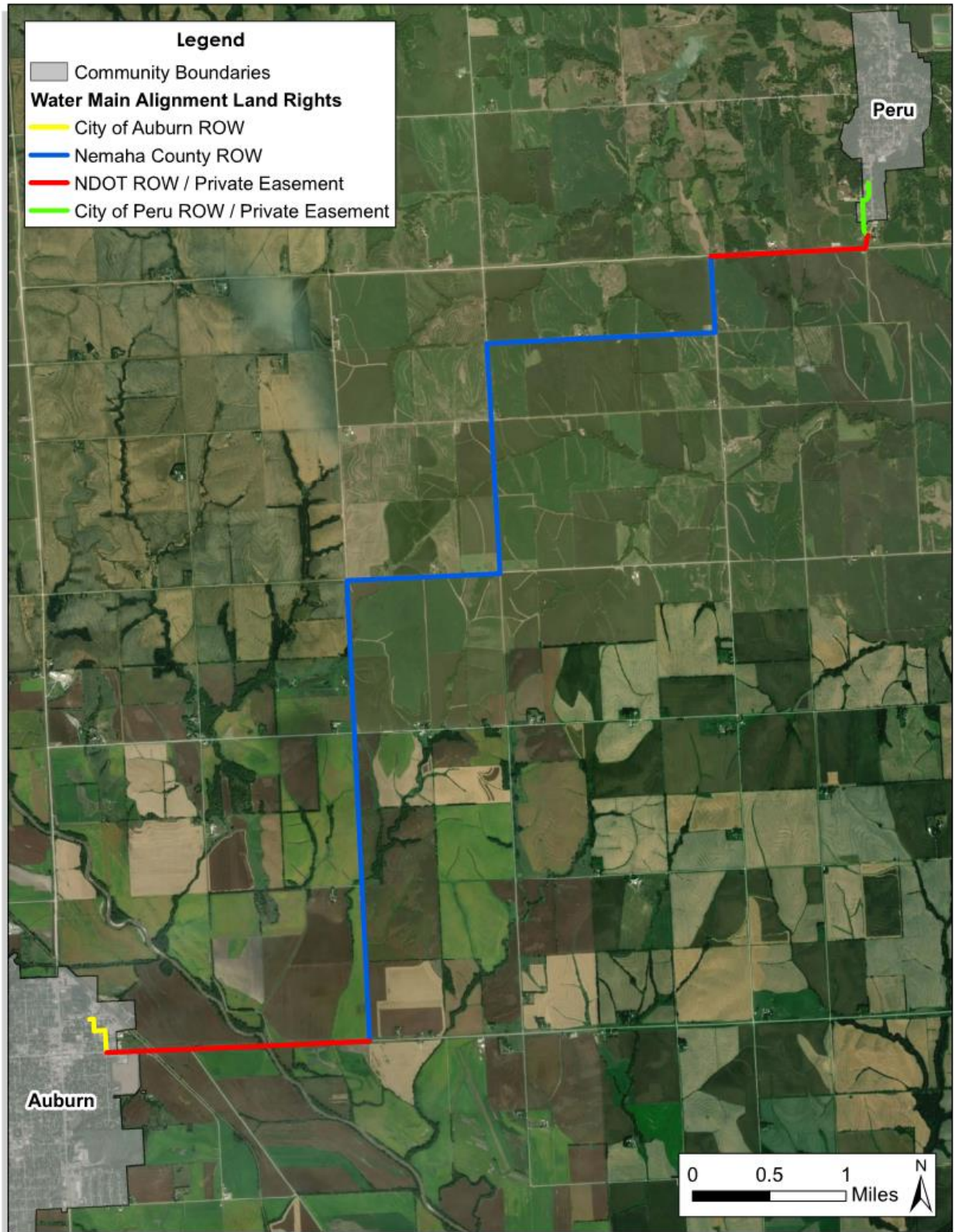
Alternatively, Auburn BPW has demonstrated an ability to consistently remove iron and manganese from their water supply and provide high quality drinking water to its customers for decades. Auburn BPW constructed a new water treatment facility in 2011 to upgrade their treatment capabilities and expand their treatment capacity for future growth. The Auburn BPW wellfield and water treatment plant are elevated above and/or outside of the floodplain and not susceptible to flood damage and loss of service during 100-year flood events.

Figure 7: Potential Well Field Locations



Desktop topographic analysis software was utilized to analyze the feasibility and economic efficiency of several water transmission main routes between the City of Peru and City of Auburn. The alignment shown in Figure 8, which also identifies the land rights along the alignment, was selected to avoid extreme high and low points along the transmission main and minimize total transmission main length. Additionally, the alignment avoids Highway 75, which may be widened to four lanes in the future, incurring additional cost to relocate the transmission main. The entire water main alignment can be installed entirely within public right of way. However, the City may attempt to engage with private landowners on a case by case basis in order to save on overall project costs.

Figure 8: Proposed Water Transmission Main Alignment and Land Rights



1.A.5 Describe any necessary water and/or land rights including pertinent water supply and water quality information (004.01 D);

Water quality for the City of Peru and for the City of Auburn were previously discussed in Section B, Paragraph 1.A.4. A MOU between the City of Peru and Auburn BPW has been executed by both parties. A groundwater transfer permit will be obtained as part of this project.

The land rights along the proposed 11 mile water transmission main alignment are illustrated in Figure 8. The land rights along the alignment are categorized approximately as follows:

- 7.5 miles in Nemaha County ROW
- 2.8 miles in NDOT ROW / Private Easement
- 0.4 miles in City of Peru ROW / Private Easement
- 0.3 miles in City of Auburn ROW / Private Easement

The majority of the proposed water transmission main alignment will be installed along minimum maintenance roads. The entire water main alignment can be installed within public right of way. The City does not anticipate resistance to the occupancy of public right of way along the proposed alignment considering the critical flood risk benefits that will be experienced by the community as a direct result of this project. However, if necessary, the City does have condemnation authority to acquire needed right-of-way for the project per Nebraska Revised Statute 18-413. Additionally, the City may attempt to engage with private landowners on a case by case basis in order to save on overall project costs. A letter from the City assuring that all necessary additional land rights will be acquired is included in Attachment A.

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

The long-term water supply system will include:

- Water Transmission Main
Approximately 11 miles of 8-inch water transmission main will be installed between the City of Auburn and City of Peru. The water transmission main will be sized for 300 gallons per minute capacity and will include all necessary valves, fittings, hydrants, casings, borings, and connections to existing water mains necessary for a fully operational water conveyance system between the two cities.
- Existing Booster Station Upgrade
The Auburn BPW has an existing booster station located just north of the water treatment plant that can be repurposed for use as a booster pump station to Peru. The building has adequate power and heat and is in good condition. A new 10-inch suction line will be required to draw water from the system, about 400 linear feet. The station is currently configured to pull

water from the Auburn water treatment plant's clear wells. New pumps, starters, and a backup generator will be installed at the booster station so the water can be pumped to the City. Controls will be integrated with the tower controls within the City to communicate with the booster pump station in Auburn.

- Decommissioning of Existing Water Treatment Facility and Well 88-1
After the successful installation of the new water transmission main to the City of Auburn, the existing water treatment facility and Well 88-1 will be decommissioned in accordance with state and federal regulations.
- Conversion of Well 81-1 to Emergency Status
Well 81-1, which provides higher quality water than Well 88-1, will not be decommissioned. Rather, it will be converted to emergency status as a failsafe against any unforeseen disruptions of service to the community as well as backup water supply for fire suppression.
- Install Electrical Controls and Alarms within the City of Peru
New electrical controls and alarms will be installed within the City of Peru to allow for the monitoring and operations of the water distribution system by Auburn BPW staff.

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

Completed Investigations

Desktop topographic analysis software was utilized to analyze the elevation profiles for the proposed connections to other regional water distribution systems. The results were used to determine the feasibility of several water transmission main routes and to develop higher confidence opinions of cost.

Planned Investigations

A geotechnical evaluation of the water transmission main alignment will be conducted during the design phase to provide site specific trench design information.

A wetland field delineation will be completed for the entire waterline alignment. Initial desktop reviews already completed have shown that the project will have minimal impacts, with most being temporary, and a Nationwide Permit will be applicable.

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

A hydrologic analysis of the Missouri River floodplain in and around the project area was completed by JEO as part of the 2019 water study addendum and technical memo that was performed to measure the potential increased flooding risks facing the City's critical infrastructure. The results of this analysis were used

to confirm that the water treatment plant and nearby water supply well, as well as the wastewater treatment lagoons, would be subjected to flood damage by flooding events slightly below the 10-year flood (10% annual chance) elevation.

Auburn BPW is currently working with the Nemaha Natural Resources District (NNRD), JEO, and LRE on a drought plan, a component of the NNRD Multi-jurisdictional Hazard Mitigation Plan. Work on the drought plan included use of a groundwater model to evaluate effects on the wellfield under a prolonged drought. The modeling concluded that the Little Nemaha River alluvial aquifer, which is the source of the Auburn BPW water supply, has an adequate supply for up to at least 200 Million Gallons per Year (MGY), even during prolonged drought conditions. This capacity is sufficiently large enough to meet the existing 100 MGY Auburn demand and the existing 50 MGY Peru demand, with additional capacity for system growth. The drought plan will outline specific action steps that Auburn BPW can enact to ensure an adequate water supply, even during periods of severe drought events.

A hydrologic analysis was not necessary for the proposed water transmission main between the City of Peru and the City of Auburn as the infrastructure is buried and not susceptible to flood damage.

- 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).

Design of the new long-term water supply system will meet the requirements and design criteria of the following design standards:

- Nebraska Department of Health Regulations Governing Public Water Supply Systems – Title 179 NAC2
- Great Lakes Upper Mississippi River Board of State Health and Environmental Managers Recommended Standards for Water Works (Ten State Standards)

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

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

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

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

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

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

Prove Economic Feasibility

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

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

The City's existing water supply wells and water treatment plant are located within the Missouri River floodplain. With the Missouri River levee breached and not to be repaired by the USACE, the facilities in the floodplain are highly susceptible to flood damage from 10-year and greater flood events. To eliminate the risk of future flood damage and create a sustainable and reliable water supply and treatment system, the following alternatives were evaluated:

- Replacement Water Supply System and Water Treatment Plant
 - Missouri River Surface Water Intake Structure
 - New Supply Well & Replacement Well 81-1
 - Two New Water Supply Wells
 - Media Filtration Treatment Facility
 - Flocculation & Sedimentation Treatment Facility
 - Membrane Filtration Treatment Facility

- Connection to Regional Water Distribution System
 - Connect to Auburn BPW
 - Connect to Otoe County Consolidated RWD #1
 - Connect to Nebraska City Utilities
 - Connect to Nemaha Rural Water District (RWD) #2
 - Connect to Atchison County Wholesale Water Commission near Rock Port, Missouri

As previously discussed, it was concluded that the most cost effective and sustainable means of providing high quality water to the City would be to build a new water transmission main between the City of Peru and the City of Auburn, and purchasing treated water from Auburn BPW. The next most cost effective alternative would be for the City to construct two new water supply wells and a new membrane filtration treatment facility with flood protection above the 100-year flood level.

Due to the high iron and manganese concentrations present in the Missouri River alluvial aquifer, a hydrogeological investigation was conducted by LRE to evaluate the available area groundwater resources near Peru, to evaluate the potential for

a higher quality water supply source in order to lessen the costs of water treatment. The hydrogeological investigation concluded that new water supply wells should not be anticipated to produce meaningfully higher water quality than the existing water supply wells. Additionally, drawing surface water from the Missouri River was considered cost-prohibitive due to the financial requirements of a new intake structure, longer conveyance infrastructure, and more expensive treatment required.

Construction of the two new water supply wells would include abandonment of the two existing wells, construction of two new flood-proof supply wells at one of the locations shown in Figure 7, a backup generator, and approximately 2,500 linear feet of 8-inch water main to convey raw water to a new water treatment plant

Taking into account the high iron and manganese concentrations anticipated from the new water supply wells, a sophisticated treatment technology is required to provide safe and reliable drinking water to the community. Construction of a new membrane filtration treatment facility was determined to be the most cost effective water treatment plant alternative. Further analysis of the membrane treatment facility alternative can be found in the 2019 technical memo included in Attachment B.

The opinion of probable cost for the construction of two new water supply wells and a new membrane filtration treatment facility is \$5,454,800. Annual operation and maintenance (O&M) costs that exceed existing O&M expenses for the City's water treatment plant for electrical usage, chemical usage, and operator labor are estimated at \$8,500.

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, up to fifty (50) years; or, with prior approval of the Director up to one hundred (100) years, ([Title 261, CH 2 - 005](#)).

Economic feasibility was reviewed as described in Title 261 – Rules Governing the Administration of the Water Sustainability Fund. The period used for this economic feasibility analysis was 50 years pursuant to the guidelines of this application. The proposed design of new long-term water supply system for the City will meet the design requirements that provide flood risk protection against 100-year flood events.

- 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).

Costs

Table 5: 50-Year Project Cost Estimate

Cost Items	Year 1	Year 2	Year 3-50	Total Amount
	2021	2022	2023-2070	
Engineering Design & Bidding	\$517,000			\$517,000
Permitting	\$38,240			\$38,240
Other Professional Services (Administrative, Legal, Fiscal, etc.)	\$64,380	\$64,380		\$128,760
Land Easement Acquisitions	\$150,000			\$150,000
Engineering Construction Services		\$150,000		\$150,000
Connection Fee to Auburn BPW		\$750,000		\$750,000
Construction		\$3,335,000		\$3,335,000
Net Increase to Operation and Maintenance Cost (Est. \$62,500/year)			\$3,000,000	\$3,000,000
TOTAL 50-YEAR PROJECT COST				\$8,069,000

The City is requesting financial support from the Water Sustainability Fund for the design, permitting, and construction of the long-term water supply system.

Auburn BPW constructed a new water treatment facility in 2011 to upgrade their treatment capabilities and increase their service capacity beyond their existing demands. The connection fee to Auburn BPW includes the costs associated with taking up a significant portion of their increased service capacity, which came at a cost of building a larger treatment facility in 2011 than required by their own water demands. This flexibility was pre-built in order to service future communities like the City of Peru, and this fee is to pay for an equitable share of the construction costs to pre-build the excess treatment facility capacity, proportional to the capacity to be indefinitely used by the City.

A net annual O&M increase of \$62,500 per year is included to account for the cost to purchase water from Auburn (\$125,000 per year) and the decrease in water treatment plant (WTP) O&M costs (\$50,000 per year in labor, \$12,000 per year in electrical costs). This does not account for any decrease in maintenance costs for the WTP (chemical purchases, repairs, etc.), as these numbers were not available. Therefore, the 50-Year project cost would be less than the stated amount. Detailed information regarding project costs is provided within the “Detailed Costs” section of Attachment C of this application.

- 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).

Tangible Benefits

Table 6: 50-Year Project Benefit Estimate

Benefit Items	Year 1-2	Year 3-50	Total Amount
	2021-2022	2023-2070	
Restore Existing Facilities to Pre-2019 Flooding Conditions	\$1,526,085		\$1,526,085
Implement NDHHS Required Codes and Standards Upgrades (Flood Protection, Redundancy, etc.)	\$6,067,515		\$6,067,515
Net Increase to Operation and Maintenance Cost (Est. \$50,000/year)		\$2,500,000	\$2,500,000
TOTAL 50-YEAR PROJECT BENEFIT			\$10,093,600

If the City chooses not to pursue a new long-term water supply project, the City would not only be required to repair their damaged facilities, but would be required to upgrade the facilities in accordance with the most recent codes and standards in order to be permitted for construction by NDHHS. NDHHS has documented their position on this matter via correspondence to JEO as shown in Attachment A. The required codes and standards upgrades would include installation of a flood protection berm around the water treatment plant, elevation of both water supply wells out of the floodplain, installation of a second gravity filter unit, installation of a filter backwash waste disposal system, various electrical upgrades, and various other treatment upgrades.

A net annual O&M increase of \$50,000 per year is included to account for the costs associated with the maintenance of the flood protection berms, maintenance of the filter backwash waste disposal system, and increased electrical costs to power the redundant treatment units. Detailed information regarding project benefits is provided within the “Detailed Benefits” section of Attachment C of this application.

Intangible and Secondary Benefits

The current discharge of backwash resulting from the water treatment process introduces high concentrations of iron and manganese into Buck Creek. Although

naturally occurring, these additional inputs can adversely affect the chemical and biological integrity of the stream. The existing facility has exceeded their discharge permit for years and been out of compliance numerous times. NDEE has continually expressed concerns regarding this issue and was actively working with the City to identify acceptable corrective actions. Eliminating this discharge would directly benefit surface water quality and aquatic life.

- 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 benefit:cost ratio calculated for the project over a 50-year period is 1.25:1. A table indicating the annual cash flow stream, is included in Attachment C of this application.

- 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.)

While tangible benefits are able to be calculated for the flood damage repair and emergency protective measures to maintain a functional water supply, it should be noted that the risk of loss to safe and reliable water to the community in any given year is immeasurable. Without an improvement project, the existing water supply wells and water treatment plant are susceptible to frequent flooding events, and the resulting loss of water service presents a significant public health and safety risk to the community.

Furthermore, continual flooding damage will result in economic hardship to the community. This could drive residents and businesses to permanently leave the community, which would then further the burden on the remaining residents. These flooding events can be quite disruptive to the community, with prolonged periods of water usage restrictions. These disruptions and economic hardships can threaten the sustainability of Peru State College's presence in the community, potentially leading to the relocation and/or closure of the college. This would risk compromising or eliminating the value the college provides to the community, State, and beyond and loss of a major economic source to southeast Nebraska.

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.

It is anticipated that FEMA and NEMA will provide combined grant assistance in an amount between \$1.0M and \$3.0M for the proposed project. However, while FEMA and NEMA have indicated that the project is eligible for grant funding through their federal and state programs, respectively, they were not able to commit to a specific dollar amount before the WSF application was due. Therefore, for the purposes of this application, it is assumed that FEMA and NEMA will contribute a combined \$1.0M of grant funding towards the costs of the proposed project. If FEMA and NEMA provide grant funding in excess of \$1.0M, then the request for financial support from the WSF Program will be proportionately reduced. If the funding sources identified below do not materialize, the City will consider seeking additional sources of grant funding or increase the DWSRF loan amount to complete the project. The City is requesting \$2,441,400 from the Water Sustainability Fund for design, permitting and construction of the new long-term water supply system. The project costs include a connection fee to Auburn BPW, which includes the costs associated with taking up a significant portion of the existing Auburn BPW treatment capacity, which was pre-built for potential expansion and equates to paying for a share of the treatment facility proportional to the capacity to be indefinitely used by the City.

The City is committed to this project and will fund their share of the project with a DWSRF loan. The City's letter of financial commitment is included in Attachment A of this application. NDHHS administers the DWSRF program, and has endorsed the project through a Letter of Support, which is included as Attachment A.

Table 7: Cost Share Breakdown

	Cost Estimate	FEMA/NEMA Share	Remaining Costs	WSF Grant Request	Local Cost Share
				60%	40%
Engineering Design and Construction Services	\$667,000	\$131,584	\$535,416	\$321,250	\$214,166
Permitting	\$38,240	\$7,544	\$30,696	\$18,418	\$12,278
Other Professional Services (Administrative, Legal, Fiscal, etc.)	\$128,760	\$25,401	\$103,359	\$62,015	\$41,343
Land Easement Acquisitions	\$150,000	\$29,592	\$120,408	\$72,245	\$48,163
Connection Fee to Auburn BPW	\$750,000	\$147,958	\$602,042	\$361,225	\$240,817
Construction of Long-Term Water Supply System	\$3,335,000	\$657,921	\$2,677,079	\$1,606,248	\$1,070,832
TOTAL	\$5,069,000	\$1,000,000	\$4,069,000	\$2,441,400	\$1,627,600

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

The provision of water supply, treatment, and distribution is considered an essential corporate purpose of a municipality, and the City of Peru has an obligation to provide safe reliable drinking water to the City and its residents. The City has the power to adjust its water user rates in order to cover the costs associated with providing this service to the community.

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

The City is planning to contribute \$1,627,600 in local match through a DWSRF loan. The provision of water supply, treatment, and distribution is considered an essential corporate purpose of a municipality, and the City of Peru has an obligation to provide safe reliable drinking water to the City and its residents. The City has the power to adjust its water user rates in order to cover the costs associated with providing this service to the community. The City will review water rates on an annual basis to ensure that it produces enough annual revenue to meet the financial obligations of the DWSRF debt service.

The City is committed to this project and will fund their share of the project with a DWSRF loan. The City's letter of financial commitment is included in Attachment A of this application. NDHHS administers the DWSRF program, and has endorsed the project through a Letter of Support, which is included as Attachment A.

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

There will be less than minimal effect on the natural environment during pipeline construction. The majority of the open trench pipeline installation will be completed within public ROW which has previously been disturbed. The pipeline crossings of sensitive environmental features such as the Little Nemaha River will be installed utilizing trenchless technologies, eliminating environmental impacts at these locations. A permanent water line connection from Peru to Auburn is much less impactful than the second best alternative and eliminates the need for Peru to drill and maintain new high-capacity wells and construct and maintain a new water treatment plant within the Missouri River floodplain.

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

The City of Peru has an obligation to provide safe reliable drinking water to the City and its residents under the Safe Drinking Water Act (SDWA). The City owns the

water tower that will be the point of connection to the Auburn BPW distribution system and owns the distribution system within the Peru city limits to convey the treated water to the residents and businesses within the community.

The majority of the project will be located within City, County, and State right of way, where the City has a legal authority to install infrastructure for the conveyance of water to its community per Nebraska Revised Statute 18-413. Additionally, Auburn BPW has expressed support for the project through a letter of support and a Memorandum of Understanding. All permits will be acquired to ensure all legal obligations of the project are fulfilled.

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

There are two plans administered by the State of Nebraska that list goals of reducing risk of flooding.

Nebraska Emergency Management Agency

The Nebraska Emergency Management Agency (NEMA) implements the State of Nebraska Hazard Mitigation Plan (HMP) 2019. The purpose of the Nebraska State Hazard Mitigation Plan is to provide a comprehensive discussion of the natural or man-made hazards that present risks to the citizens, resources, and property of Nebraska along with identifying the states objectives and commitment in reducing the risks from these hazards. An abbreviated summary of the plan's goals and objectives related to this project include:

Goal 1 – Reduce or eliminate long term risk to human life

Objectives: Promote and support projects that endeavor to protect or exclude human habitation in flood zones or areas prone to other hazards.

Goal 2 – Reduce or eliminate long term risk to property and/or the environment.

Objectives: Collaborate with NeDNR to utilize FEMA funding to mitigate against flooding hazards (Objective 2.2)

NeDNR Annual Report and Plan of Work - 2019

In 2019 the NeDNR completed the most current Annual Report and Plan of Work¹. The NeDNR utilizes several of its program areas to implement the state water planning and review process. At least two of the six implementation objectives identified in the Annual Plan of Work will be addressed through this project. They include:

Objective #1 - Maintain data, information, and analysis capabilities for water planning, including specific programs for collecting, maintaining, and distributing

¹ NeDNR. Annual Report and Plan of Work for the State Water Planning and Review Process. September 2019. Page 1 - 2

information on streamflows, as well as analyzing water uses and water supplies across the state.

As part of the NNRD Hazard Mitigation Plan update, 2020, Auburn BPW is establishing a Drought Mitigation Plan. NeDNR streamflow and well information was used to assess drought scenarios.

Objective # 2 - Provide staff and resources to support planning and implementation of water resources projects.

NeDNR will support permitting and through the WSF could provide funding and staff to assist with implementation of the WSF project.

Objective #4 - Provide resources to map and identify areas vulnerable to flood damage.

Floodplain mapping and planning was critical to the decisions made to seek a long-term water supply for Peru, which will remove critical infrastructure from the Missouri River floodplain.

Objective #5 - Participate in interagency collaboration with federal agencies, state agencies, local natural resources districts (NRDs), and other water interest entities on various water resources programs and projects.

This project meets NEMA State Hazard Mitigation Plan Goal #2, Objective 2.2, to collaborate with FEMA and NeDNR to mitigate against flooding hazards.

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 land rights along the proposed 11 mile water transmission main alignment are illustrated in Figure 8. The land rights along the alignment are categorized approximately as follows:
 - 7.5 miles in Nemaha County ROW
 - 2.8 miles in NDOT ROW / Private Easement
 - 0.4 miles in City of Peru ROW / Private Easement
 - 0.3 miles in City of Auburn ROW / Private Easement

The entire water main alignment can be installed entirely within public right of way. However, the City may attempt to engage with private landowners on a case by case basis in order to save on overall project costs.

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

Easements and right-of-way permits will be obtained as part of the project. The majority of the project will be located within City, County, and State right of way, where the City has a legal authority to install infrastructure for the conveyance of water to its community per Nebraska Revised Statute 18-413. Within city limits, the City has authority to manage land within its jurisdiction in such a way that is in the best interest of the City. There are not anticipated issues with obtaining easements or right-of-way permits.

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

As mentioned, the City has a legal authority to install infrastructure for the conveyance of water to its community per Nebraska Revised Statute 18-413. There is a permitting process for utilities to occupy State and County ROW that will be followed by the City. Both Auburn and Peru are familiar with these requirements and are prepared to work with NDOT, Nemaha County, private property owners, and others to swiftly obtain legal permission to install the waterline.

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

The City has an obligation to provide safe reliable drinking water under the Safe Drinking Water Act (SDWA) to the City and its residents and has the authority to undertake projects and adjust user rates to that end. The City and Auburn BPW have an existing relationship, as Auburn BPW currently manages the Peru water system. Both parties are ready to work together to undertake and participate in the project.

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

If the City's existing water supply and treatment system are not restored and improved, the City's water supply and treatment facilities will be at risk from future flooding events of the 10-year flood level magnitude and greater. Furthermore, the accumulated costs of flooding repair and emergency protection measures would lead to ever increasing economic hardships to the community. Probable environmental and ecological consequences include:

- The City's two water supply wells are located within the 100-year floodplain of the Missouri River. A relatively low Missouri River flood level would result in the City's drinking water supply being compromised. Drinking water for

994 residents and students/faculty of Peru State College would be compromised. The resulting loss of water service presents a significant public health and safety risk to the community.

- The City's existing water treatment plant is located within the 10-year floodplain of the Missouri River. A relatively low Missouri River flood level would overwhelm the water treatment plant; requiring a shutdown of service to the community as the facility's chemical tanks and equipment became inundated with flood waters for an indefinite period. The resulting loss of water service presents a significant public health and safety risk to the community. The chemicals stored in the building would be released to the floodwaters in an uncontrolled manner, potentially creating toxic conditions that would result in potential fish kills and diminished water quality for the downstream communities and residents along the Missouri River.
- Economic hardships may result for the property owners who cannot afford the increased user rates from the required flood rehabilitation and protection measures. Furthermore, these economic hardships have the potential to create an unsustainable future for Peru State College, which could lead to its relocation and/or closure.
- The City's existing discharge of backwash resulting from the water treatment process introduces high concentrations of iron and manganese into Buck Creek. Although naturally occurring, these additional inputs can adversely affect the chemical and biological integrity of the stream. The existing facility has exceeded their discharge permit for years and been out of compliance numerous times.

Section C.

NRC SCORING

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

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

Notes:

- The responses to one criterion *will not* be considered in the scoring of other criteria. Repeat references as needed to support documentation in each criterion as appropriate. The 15 categories are specified by statute and will be used to create scoring matrixes which will ultimately determine which projects receive funding.
- There is a total of 69 possible points, plus two bonus points. The potential number of points awarded for each criteria are noted 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 meets the WSF goal to remediate or mitigate threats to drinking water by removing the City of Peru's (City's) dependence on a flood prone wellfield and water treatment plant by permanently connecting to the Auburn Board of Public Works' water distribution system.

The 2019 Missouri River flooding events breached an earthen levee that provided flood protection to the northern portion of the community below the bluffs and within the floodplain, where the City's water supply wells, water treatment plant, and wastewater treatment lagoons were all located. As a result of the flooding, the City's existing water treatment plant and water supply wells were severely damaged and left inoperable, as can be seen in the March 2019 Flood Damage Assessment included in Attachment B. The U.S Army Corps of Engineers has determined that the levee is not currently eligible for repair or rehabilitation. Without the levee protection, the City's critical water and wastewater infrastructure systems are susceptible to flood damage from 10-year recurrence interval and greater flood events. Regardless of the future rehabilitation status of the levee, the existing water and wastewater facilities will remain within the regulated floodplain and localized flood protection will be required for each facility. Therefore, the City will need to provide facility specific flood protection for their water supply and treatment facilities or relocate their facilities outside of the floodplain of the Missouri River in order to achieve a sustainable water supply and treatment system.

The historical flood protection provided by the earthen levee to the water supply wells and water treatment plant prior to the 2019 flooding events, with the earthen levee still intact, is illustrated in Figure 9.

The present-day levee, which is completely breached and provides no flood protection to the community, is illustrated in Figure 10.

Additionally, aerial imagery showing the condition of the levee is shown in figures 11, 12, and 13 for before, during, and after the 2019 flooding events, respectively.

Figure 9: Pre 2019 Flooding Conditions

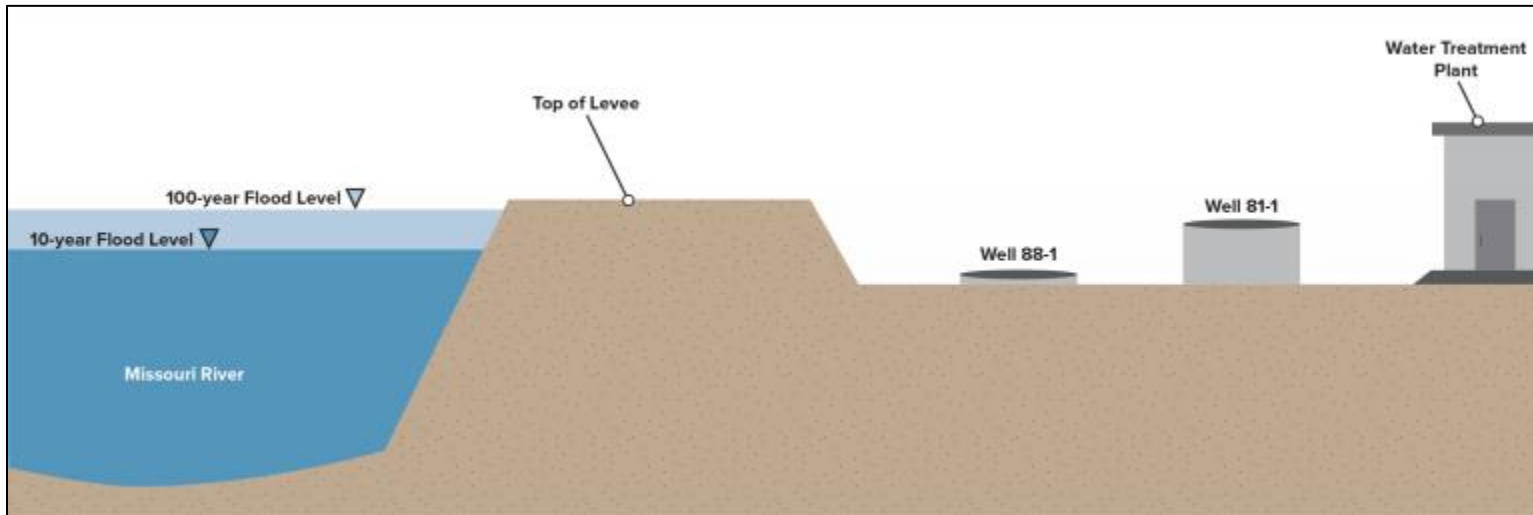


Figure 10: Post 2019 Flooding Conditions

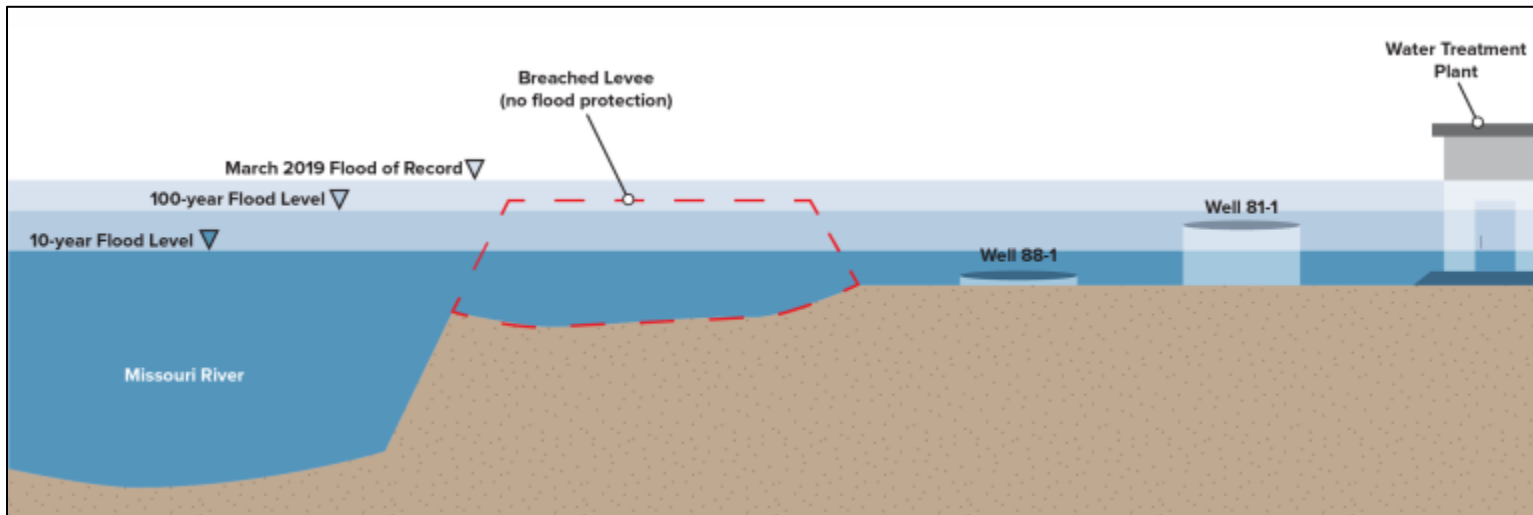


Figure 11: Aerial Imagery of the Missouri River Levee (Pre-2019 Flooding)

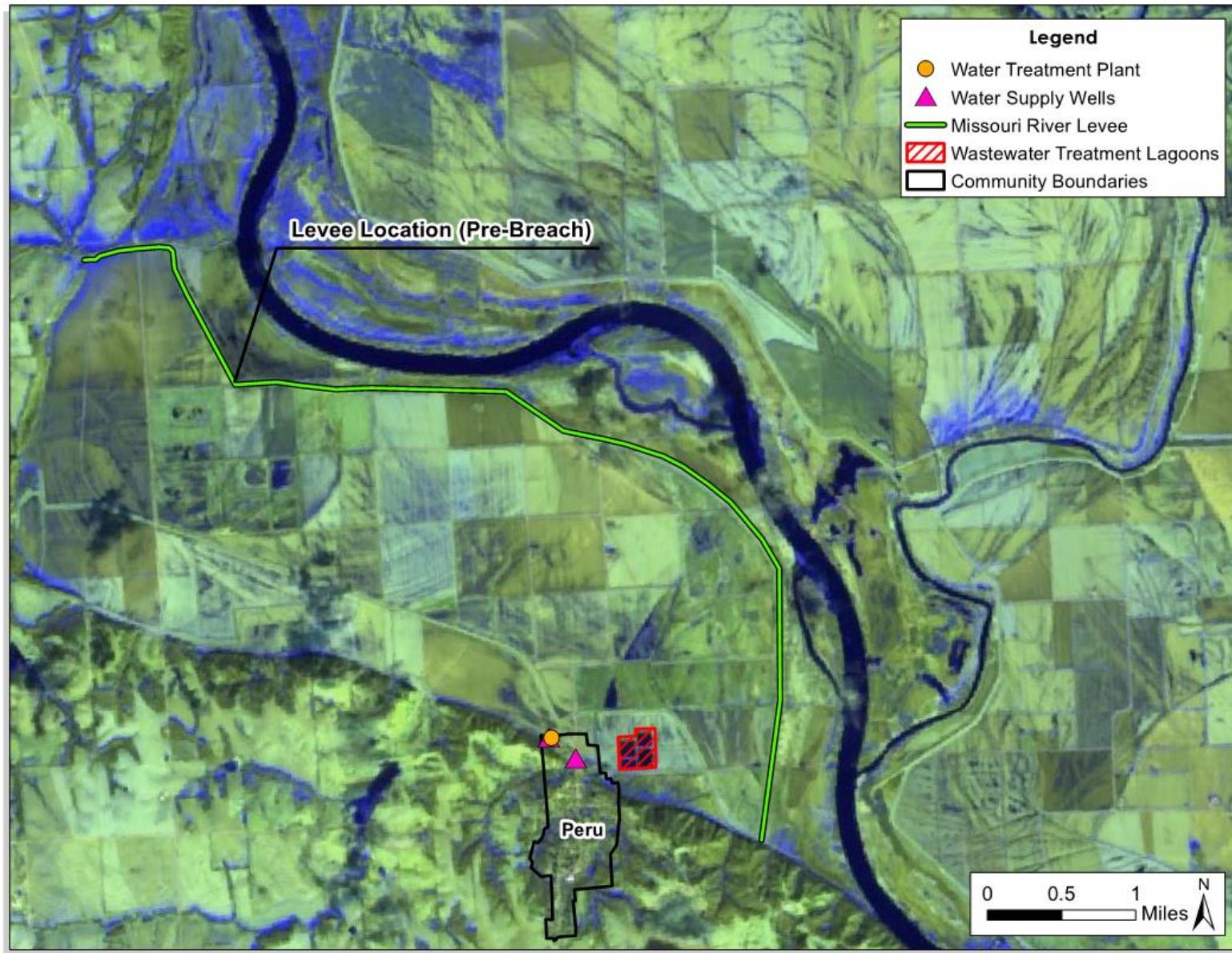


Figure 12: Aerial Imagery of the Missouri River Levee (March 2019 Flooding)

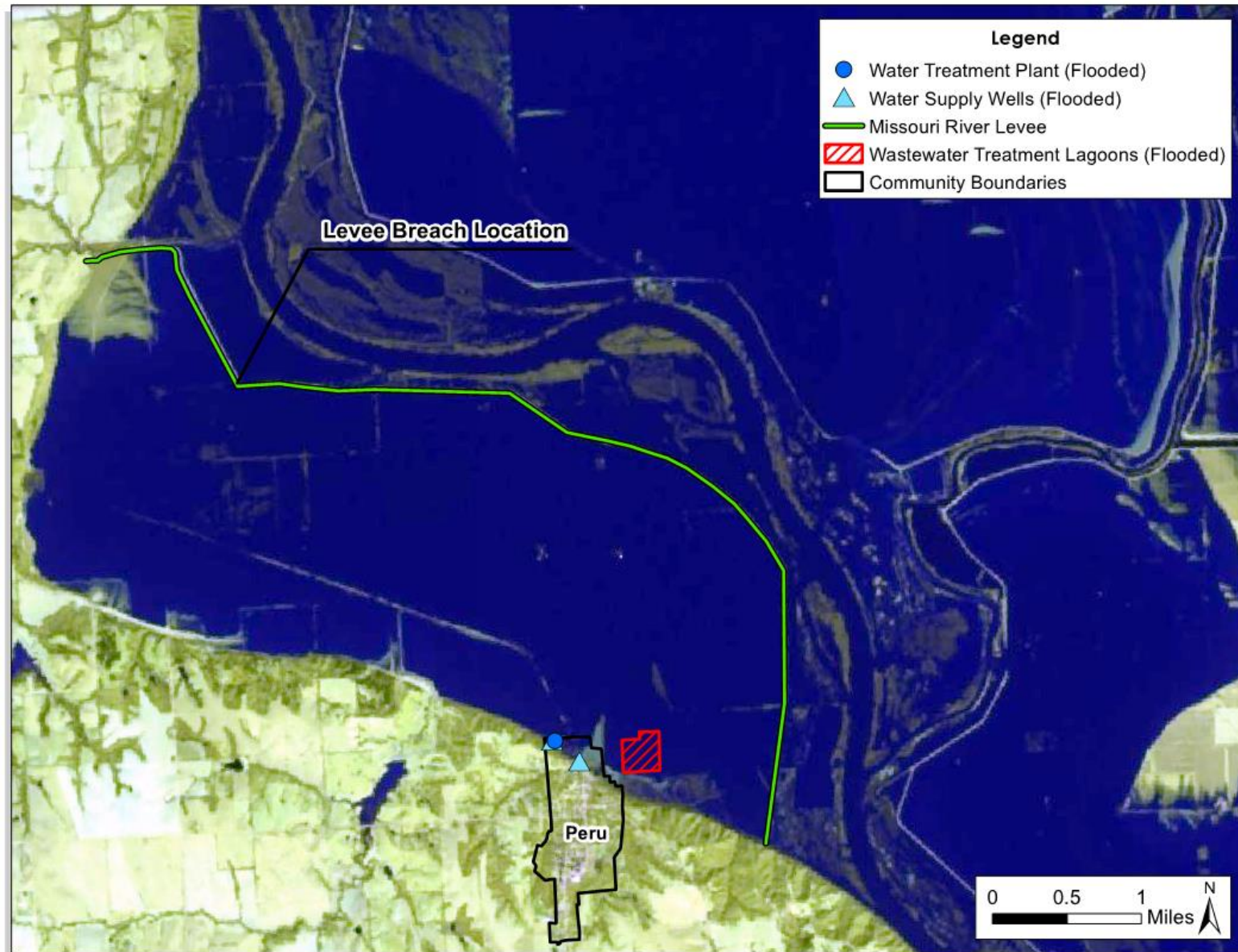
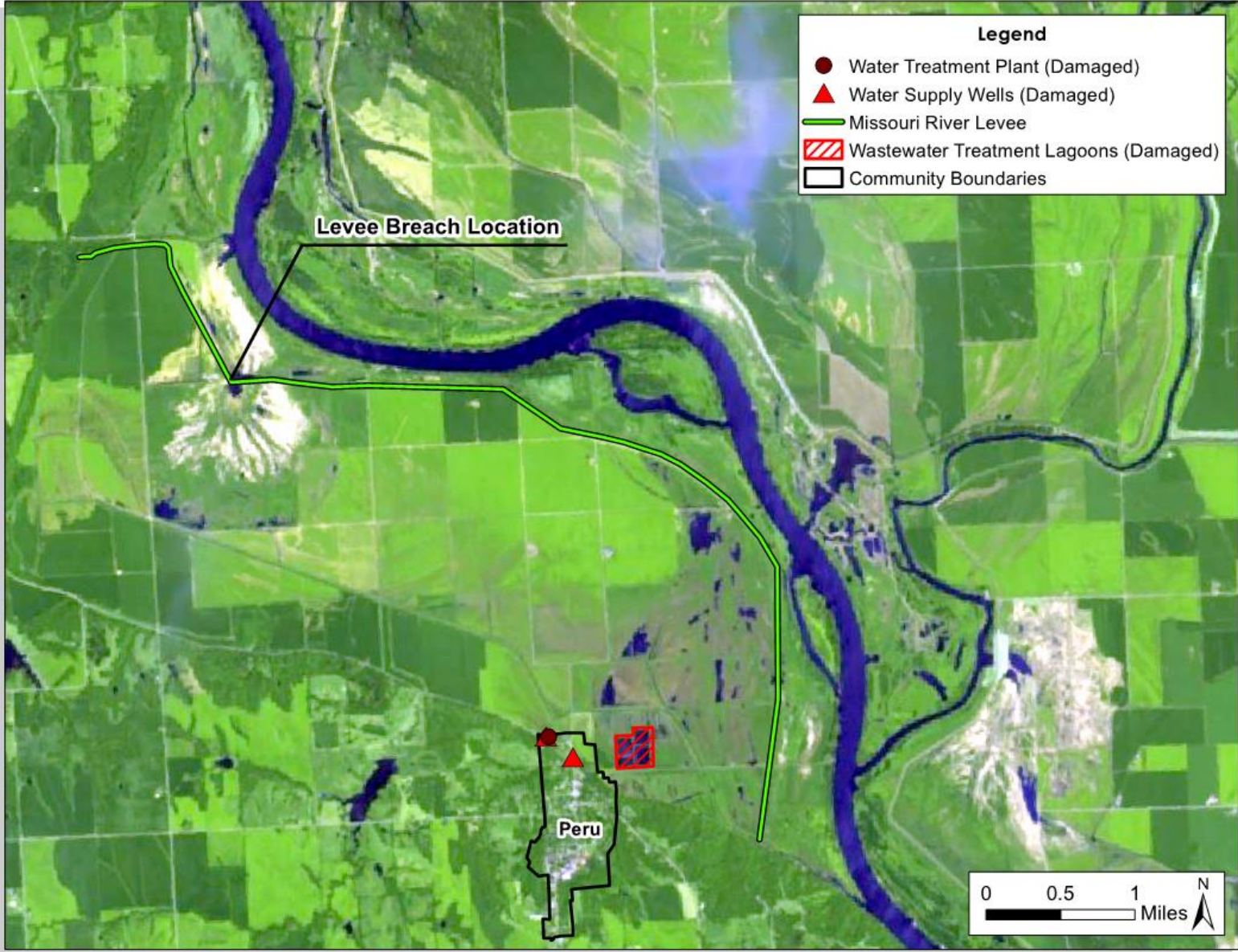


Figure 13: Aerial Imagery of the Missouri River Levee (Post-2019 Flooding)



An engineering analysis of the available alternatives concluded that the most cost effective and sustainable means of providing an adequate supply of high quality water to the City would be to build a new 8" water transmission main between the City of Peru and the City of Auburn, totaling approximately 11 miles in length, and purchasing treated water from Auburn Board of Public Works (BPW). The Auburn BPW wellfield and water treatment plant are elevated above and/or outside of the floodplain and not susceptible to flood damage and loss of service during 100-year flood events.

Furthermore, the Auburn BPW is currently working with the Nemaha Natural Resources District (NNRD), JEO, and LRE on a drought plan, a component of the NNRD Multi-jurisdictional Hazard Mitigation Plan. Work on the drought plan included use of a groundwater model to evaluate effects on the wellfield under a prolonged drought. The modeling concluded that the Little Nemaha River alluvial aquifer, which is the source of the Auburn BPW water supply, has an adequate supply for up to at least 200 Million Gallons per Year (MGY), even during prolonged drought conditions. This capacity is sufficiently large enough to meet the existing 100 MGY Auburn demand and the existing 50 MGY Peru demand, with additional capacity for system growth. The drought plan will outline specific action steps that Auburn BPW can enact to ensure an adequate water supply, even during periods of severe drought events.

If the City's existing water supply and treatment system is not restored and improved, the City's water supply and treatment facilities will be at risk from future flooding events of the 10-year flood level magnitude and greater. Furthermore, the accumulated costs of flooding repair and emergency protection measures would lead to ever increasing economic hardships to the community. Probable consequences to the community include:

- The City's two water supply wells are located within the 100-year floodplain of the Missouri River. A relatively low Missouri River flood level would result in the City's drinking water supply being compromised. Drinking water for 994 residents and students/faculty of Peru State College would be compromised. The resulting loss of water service presents a significant public health and safety risk to the community.
- The City's existing water treatment plant is located within the 10-year floodplain of the Missouri River. A relatively low Missouri River flood level would overwhelm the water treatment plant; requiring a shutdown of service to the community as the facility's chemical tanks and equipment became inundated with flood waters for an indefinite period. The resulting loss of water service presents a significant public health and safety risk to the community.
- Economic hardships may result for the property owners who cannot afford the increased user rates from the required flood rehabilitation and protection measures. Furthermore, these economic hardships have the potential to create an unsustainable future for Peru State College, which could lead to its relocation and/or closure.

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.

NNRD Integrated Management Plan (IMP)

The City of Peru will be included in the NNRD Integrated Management Plan (IMP), in progress, as of July 2020. The NNRD recently began writing their IMP and with the first stakeholder meeting scheduled for July 28th, 2020. While no specific goals have been drafted, most IMPs include Water Supply Management as a goal. NNRD has been an active partner in working with its communities on consolidation of systems due to inconsistent water supplies in this area. Past conversations with NNRD have supported a regional water system approach and expansion of water systems. The Little Nemaha River is known to have a hydrogeological connection between surface water and groundwater. This area, that includes the Auburn BPW wellfield, is assumed to be subject to beneficial actions in the IMP to ensure stream flows are balanced with pumping demands on the aquifer.

NNRD Groundwater Management Plan 2016

The NNRD updated their Groundwater Management Plan (GWMP) in 2016. They have supported Auburn BWP with wellhead protection planning and teamed to install four monitoring wells near the Auburn wellfield in 2019 to increase capability to monitor water quality and water levels. Below is an abbreviated summary of applicable goals related to this project:

Goal – Protect and manage surface and groundwater resources in the Nemaha River basin.

Objectives – Administer the GWMP, monitoring groundwater level changes, monitoring water quality, conservation, hydrogeologic studies, and wellhead protection planning.

NNRD Hazard Mitigation Plan – 2020

The NNRD Hazard Mitigation Plan update for 2020 includes the Auburn Drought Plan. Through this project, JEO and LRE completed an assessment of the wellfield's drought resiliency. Preliminary results have shown that the Little Nemaha River aquifer has an adequate supply for up to at least 200 Million Gallons per Year (MGY), even during prolonged drought conditions. This capacity is sufficiently large enough to meet the existing 100 MGY Auburn demand and the

existing 50 MGY Peru demand, with additional capacity for system growth. The drought plan will outline specific action steps that Auburn BPW can enact to ensure an adequate water supply, even during periods of severe drought events.

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 contributes to water sustainability in the following ways: 1) mitigating a major threat to the City of Peru's existing water system, 2) contributing to multiple water supply management goals including flood control (in this case, mitigation), 3) enhancing drinking water quality, and 4) using the most cost-effective solutions available.

Additionally, the NNRD is currently updating their Multi-jurisdictional Hazard Mitigation Plan, which includes a drought plan for Auburn. The intent of the drought plan is to evaluate existing data, which includes historical stream flows, groundwater levels, drought stages, drought impacts, well construction data, and use of an existing groundwater model to depict the impacts to the wells during drought conditions. The planning mechanism will include drought mitigation, preparedness, and response actions, as well as recommendations for long-term solutions for drought resilience. This will provide the Auburn BPW a tool to help manage the anticipated increase in demand from Peru should a drought occur. This document and accompanying evaluations will prepare Auburn to mitigate aquifer depletion.

Auburn BPW also has a Water Watch Program, which is a public outreach program designed to curtail unnecessary water usage and conserve water whenever possible, in order to reduce aquifer depletion during drought conditions. Furthermore, Auburn BPW uses surface water from Longs Creek to irrigate the community sports complex and uses treated wastewater to irrigate the golf course. Both of these actions reduce pumping demand from the aquifer, making the aquifer more drought resilient, and help increase flows in the Little Nemaha River.

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.

This project provides major benefits to the water supply goals including: 1) flood control, reducing threats to property damage and safeguarding a water supply for municipal, institutional (Peru State College), and commercial uses. The project also meets the following WSF goals: provide increased water productivity, enhance water quality, and use the most cost-effective solutions available. And according to the WSF statute, this project also meets what the Legislature has defined as meeting WSF goals construction of new water supply infrastructure that will provide flood prevention for protection of critical infrastructure.

In 2019, JEO updated the Peru Water System Study as a result of the flood damages. It was concluded that many improvements and costly codes and standards upgrades were needed and that the existing system, even if repaired and flood protection measures installed, did not provide adequate redundancy or backup capabilities. Plus, groundwater conditions have historically yielded very poor-quality water. The recommendation of the study was to seek a long-term water supply connection to the Auburn BPW water system.

A total estimate of repairs for the existing water treatment plant and wellfield was \$7,593,600, including the codes and standards upgrades required by NDHHS. This project will remove the need to rebuild the water treatment and supply systems, eliminate critical infrastructure from the Missouri River floodplain, and eliminate the need to build localized flood protection around the new water supply and treatment facilities, as required by codes and standards. The proposed project will provide immediate benefits to the City of Peru and Peru State College by eliminating the need to repair a devastated wellfield and water treatment plant that, even during pre-flood conditions, yielded poor water quality due to high iron and manganese concentrations.

Long range benefits from the proposed project include economic sustainability and prosperity for the City of Peru and assurance that the City can continue to provide a reliable supply of high quality water to its residents and Peru State College, a major economic source for southeastern Nebraska.

If the City's existing water supply and treatment system are not restored and improved, the City's water supply and treatment facilities will be at risk from future flooding events of the 10-year flood level magnitude and greater. Furthermore, the accumulated costs of flooding repair and emergency protection measures would lead to ever increasing economic hardships to the community. Probable consequences to the community include:

- The City's two water supply wells are located within the 100-year floodplain of the Missouri River. A relatively low Missouri River flood level would result in the City's drinking water supply being compromised. Drinking water for 994 residents and students/faculty of Peru State College would be compromised. The resulting loss of water service presents a significant public health and safety risk to the community.
- The City's existing water treatment plant is located within the 10-year floodplain of the Missouri River. A relatively low Missouri River flood level would overwhelm the water treatment plant; requiring a shutdown of service to the community as the facility's chemical tanks and equipment became inundated with flood waters for an indefinite period. The resulting loss of water service presents a significant public health and safety risk to the community.
- Economic hardships may result for the property owners who cannot afford the increased user rates from the required flood rehabilitation and protection measures. Furthermore, these economic hardships have the potential to create an unsustainable future for Peru State College, which could lead to its relocation and/or closure.
- The City's existing discharge of backwash resulting from the water treatment process introduces high concentrations of iron and manganese into Buck Creek. Although naturally occurring, these additional inputs can adversely affect the chemical and biological integrity of the stream. The existing facility has exceeded their discharge permit for years and been out of compliance numerous times.

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

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

The Nebraska State Legislature, in Statute 46-613, states, "Preference in the use of ground water shall be given to those using the water for domestic purposes. They shall have preference over those claiming it for any other purpose. Those using the water for agricultural purposes shall have the preference over those using the same for manufacturing or industrial purposes." The proposed project will maximize the beneficial use of Nebraska's water resources for domestic uses for the City of Peru, including Peru State College, a major economic source for southeastern Nebraska.

As a result of the 2019 Missouri River flooding, the City's existing water treatment plant and water supply wells were severely damaged and left inoperable. As an

emergency measure, the City continually hauled treated drinking water by the truckload from the City of Auburn to the City of Peru's distribution system from March to July 2019. To reestablish a functional water supply to the community, the City rehabilitated their highest quality water supply well and constructed a temporary water treatment facility outside of the floodplain. The temporary treatment facility is designed to operate through the end of 2022, by which time a permanent treated water source will need to be operational.

This project will alleviate this concern and eliminate the need for the City to continue to rely on state and federal flood relief assistance and put a permanent, long-term solution into place.

The current discharge of backwash resulting from the water treatment process introduces high concentrations of iron and manganese into Buck Creek. Although naturally occurring, these additional inputs can adversely affect the chemical and biological integrity of the stream. NDEE staff has expressed concerns regarding this issue. Eliminating this discharge would directly benefit surface water quality and aquatic life.

There are no anticipated reductions in 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.

The 2019 Missouri River flooding events breached an earthen levee that provided flood protection to the northern portion of the community, where the City's water supply wells, water treatment plant, and wastewater treatment lagoons were all located. The U.S Army Corps of Engineers has determined that the levee is not currently eligible for repair or rehabilitation. Without the levee protection, the City's critical water and wastewater infrastructure systems are susceptible to flood damage from 10-year recurrence interval and greater flood events. Regardless of the future rehabilitation status of the levee, the existing water and wastewater facilities will remain within the regulated floodplain and localized flood protection will be required for each facility. To eliminate the risk of future flood damage and create a sustainable and reliable water supply and treatment system, the following alternatives were evaluated:

- Replacement Water Supply System and Water Treatment Plant
 - Missouri River Surface Water Intake Structure
 - New Supply Well & Replacement Well 81-1

- Two New Water Supply Wells
- Media Filtration Treatment Facility
- Flocculation & Sedimentation Treatment Facility
- Membrane Filtration Treatment Facility
- Connection to Regional Water Distribution System
 - Connect to Auburn BPW
 - Connect to Otoe County Consolidated RWD #1
 - Connect to Nebraska City Utilities
 - Connect to Nemaha Rural Water District (RWD) #2
 - Connect to Atchison County Wholesale Water Commission near Rock Port, Missouri

An engineering analysis of the available alternatives concluded that the most cost effective and sustainable means of providing an adequate supply of high quality water to the City would be to build a new 8-inch water transmission main between the City of Peru and the City of Auburn, totaling approximately 11 miles in length, and purchasing treated water from Auburn Board of Public Works (BPW). The estimated project costs of the proposed project are detailed in Table 8.

Table 8: Project Cost Estimate Breakdown

Cost Items	Total Amount
Engineering Design & Bidding	\$517,000
Permitting	\$38,240
Other Professional Services (Administrative, Legal, Fiscal, etc.)	\$128,760
Land Easement Acquisitions	\$150,000
Engineering Construction Services	\$150,000
Connection Fee to Auburn BPW	\$750,000
Construction	\$3,335,000
TOTAL COST	\$5,069,000

A net annual operation and maintenance (O&M) increase of \$62,500 per year is anticipated for the proposed project, which includes the cost to purchase water from Auburn (\$125,000 per year) less the decrease in water treatment plant (WTP) O&M costs (\$50,000 per year in labor, \$12,000 per year in electrical costs). This does not account for any decrease in maintenance costs for the WTP (chemical purchases, repairs, etc.), as these numbers were not available.

If the City chooses not to pursue a new long-term water supply project, the City would not only be required to repair their damaged facilities, but would be required to upgrade the facilities in accordance with the most recent codes and standards in order to be permitted for construction by NDHHS. NDHHS has documented their position on this matter via correspondence to JEO as shown in Attachment A. The

required codes and standards upgrades would include installation of a flood protection berm around the water treatment plant, elevation of both water supply wells out of the floodplain, installation of a second gravity filter unit, installation of a filter backwash waste disposal system, various electrical upgrades, and various other treatment upgrades. Detailed information regarding project benefits is provided within the “Detailed Benefits” section of Attachment C of this application.

Benefits

Table 9: 50-Year Project Benefit Estimate

Benefit Items	Year 1-2	Year 3-50	Total Amount
	2021-2022	2023-2070	
Restore Existing Facilities to Pre-2019 Flooding Conditions	\$1,526,085		\$1,526,085
Implement NDHHS Required Codes and Standards Upgrades (Flood Protection, Redundancy, etc.)	\$6,067,515		\$6,067,515
Net Increase to Operation and Maintenance Cost (Est. \$50,000/year)		\$2,500,000	\$2,500,000
TOTAL 50-YEAR PROJECT BENEFIT			\$10,093,600

The exhaustive list of long-term water supply system alternatives was narrowed down based on preliminary opinions of cost, and a detailed cost estimate was prepared for the remaining alternatives in order to perform a cost effective analysis. As a result of this analysis, the proposed connection to Auburn BPW was selected as the most cost-effective alternative and results in the lowest impact to user rates.

Table 10: Long-Term Water Supply System Alternatives – Opinions of Probable Cost Summary

Alternative Description	Opinion of Cost
Media Filtration Treatment Facility	\$6,310,000
Flocculation & Sedimentation Treatment Facility	\$6,710,100
Membrane Filtration Treatment Facility	\$5,454,800
Connect to Auburn	\$5,069,000
Connect to Nebraska City Utilities	\$6,438,236

7. Helps the state meet its obligations under interstate compacts, decrees, or other state contracts or agreements or federal law;
 - Identify the interstate compact, decree, state contract or agreement or federal law.

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

The City of Peru has an inherent legal and fiduciary responsibility to maintain a dependable and adequate supply of safe water to their customers. The Safe Drinking Water Act (SDWA) recognizes the people of Peru are entitled to expect their drinking water is safe. It provides for the protection of human health and prevents drinking water health hazards through the control and regulation of drinking water systems and drinking water testing. In a municipal context, a drinking water system includes all supply, treatment and storage facilities and distribution pipes usually up to customer property lines.

As a result of the 2019 Missouri River flooding, the City's existing water treatment plant and water supply wells were severely damaged and left inoperable. As an emergency measure, the City continually hauled treated water by the truckload from Auburn to the Peru's distribution system from March to July 2019. To reestablish a functional water supply to the community, the City rehabilitated their highest quality water supply well and constructed a temporary water treatment facility outside of the floodplain. The temporary treatment facility is designed to operate through the end of 2022, by which time a permanent treated water source will need to be operational. The cost of the temporary system remains a burden on the City, state, and federal government, as the true cost of damages from the March 2019 flood event continue to tally.

Under the SDWA, minimum standards are required to be maintained by public water suppliers, per the U.S. Environmental Protection Agency. Prior to the flood event, the City struggled to meet drinking water quality standards for iron and manganese, even with a fully operational treatment system. Peru State College has even provided its own, secondary treatment system, to alleviate ongoing water quality complains from students and faculty.

This project will allow the City to immediately comply with the SDWA by providing a reliable, high quality water supply that passes through Auburn's iron and manganese treatment plant. In fact, Auburn BPW drinking water has recently won the award for the best tasting drinking water in Nebraska in 2017 and 2018, which is rated based on taste, appearance, and odor of the treated water supply.

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.

The 2019 Missouri River flooding events breached the earthen levee that provided flood protection to the northern portion of the community. As a result, the City’s existing water treatment plant and water supply wells were severely damaged and left inoperable. The U.S Army Corps of Engineers has determined that the levee is not currently eligible for repair or rehabilitation. Without the levee protection, the City’s critical water and wastewater infrastructure systems are susceptible to flood damage from 10-year recurrence interval and greater flood events and the resulting loss of water service presents a significant public health and safety risk to the community.

The total estimated costs to be incurred by the City to implement both emergency protection measures and provide temporary treatment to the community from March 2019 through the end of 2022 as a result of the 2019 flooding events, are detailed in the “Detailed Benefits” section of Attachment C and summarized in Table 11. If the City were not to pursue a new long-term water supply project, the City would risk damages up to this amount from future flooding events.

If the City were to repair their existing facilities, they would also be required to upgrade the facilities in accordance with the most recent state and federal codes and standards in order to be permitted for construction by NDHHS. NDHHS has documented their position on this matter via correspondence to JEO as shown in Attachment A. The required codes and standards upgrades would include installation of a flood protection berm around the water treatment plant, elevation of both water supply wells out of the floodplain, installation of a second gravity filter unit, installation of a filter backwash waste disposal system, electrical upgrades, and various other treatment upgrades. The estimated costs to repair the existing water treatment plant and wellfield, including the codes and standards upgrades required by NDHHS, are detailed in the “Detailed Benefits” section of Attachment C and summarized in Table 11.

Table 11: Flood Repair and Mitigation Cost Summary

Description	Opinion of Cost
Emergency Protection Measures and Temporary Treatment Facility (March 2019 – December 2022)	\$ 1,162,300
Restore Existing Facilities to Pre-2019 Flooding Conditions & Implement NDHHS Required Codes and Standards Upgrades	\$7,593,600

Peru is an integral community to the state of Nebraska, as the home of Peru State College and over 994 residents and students. The continual flooding damage or major rehabilitation and flood protection costs would result in economic hardship to the community. This could drive residents and businesses to permanently leave the community, which would then further the burden on the remaining residents. Furthermore, these flooding events can be quite disruptive to the community, with prolonged periods of water usage restrictions. These disruptions and economic hardships can threaten the sustainability of Peru State College's presence in the community, potentially leading to the relocation and/or closure of the college. This would risk compromising or eliminating the value the college provides to the community, State, and beyond and loss of a major economic source to southeast Nebraska.

The proposed project, which would connect the City of Peru to the Auburn Board of Public Works water distribution system, would completely eliminate the threats posed by Missouri River flooding events to the City's water supply and water treatment facilities, and would restore a sustainable supply of safe drinking water to the community. Financial support from the WSF would relieve a great portion of the economic burden that the 2019 Missouri River flooding events have forced upon the community.

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.

The City currently draws water from the Missouri River alluvial aquifer, which provides a sufficient quantity of water but has poor water quality with high concentrations of iron and manganese that must be removed before it is made available for public consumption. Even after treatment, many members of the community, including students and faculty of Peru State College, experience frequent colored water from the levels of minerals that remain in the water supply after treatment. This leads to constant complaints and dissatisfaction with the water quality provided. On occasion, Peru State College has even provided secondary water treatment of their own in order to try to alleviate these issues on their campus.

The City has attempted to locate higher quality source water for the community. However, based on a hydrogeological review of groundwater in the area conducted by Leonard Rice Engineers in 2019, the only viable locations for new City wells are

within the Missouri River alluvium, north and east of the existing wells. The results of the hydrogeological investigation concluded that a higher quality water supply should not be anticipated from the new water supply wells. In order to provide a safe and reliable drinking water supply to the community, the City would have to build a relatively sophisticated water treatment facility and new water supply wells elevated above the floodplain of the Missouri River. The proposed project is more cost effective than building replacement water supply and treatment facilities.

Alternatively, Auburn BPW has demonstrated an ability to consistently remove iron and manganese from their water supply and provide high quality drinking water to its customers for decades. Auburn BPW constructed a new water treatment facility in 2011 to upgrade their treatment capabilities and expand their treatment capacity for future growth. Auburn BPW drinking water has recently won the award for the best tasting drinking water in Nebraska in 2017 and 2018, which is rated based on taste, appearance, and odor of the treated water supply. Additionally, the Auburn BPW wellfield and water treatment plant are elevated above and/or outside of the floodplain and not susceptible to flood damage and loss of service during 100-year flood events.

Typical drinking water quality for the City of Peru can be seen in Figure 14, while typical drinking water for the City of Auburn can be seen in Figure 15.

Figure 14: Typical Peru Drinking Water

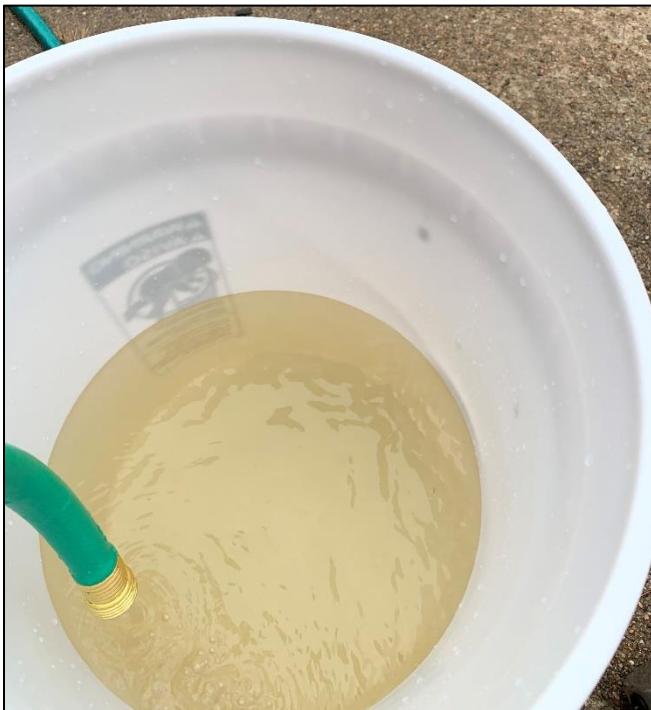


Figure 15: Typical Auburn Drinking Water



The current discharge of backwash resulting from the City's water treatment process introduces high concentrations of iron and manganese into Buck Creek. Although naturally occurring, these additional inputs can adversely affect the

chemical and biological integrity of the stream. The existing facility has exceeded their discharge permit for years and been out of compliance numerous times. NDEE has continually expressed concerns regarding this issue and was actively working with the City to identify acceptable corrective actions. Eliminating this discharge would directly benefit surface water quality and aquatic life.

The drinking water quality improvements would benefit the entire community of Peru, which is home to over 994 residents and students/faculty of Peru State College. The elimination of the backwash discharge water would improve the water quality of the receiving stream network downstream from the Buck Creek discharge location.

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 City of Peru experienced extensive damage as a result of the 2019 Missouri River flooding and levee breach, which included damage to critical infrastructure, such as the City's water supply wells, water treatment plant, wastewater treatment lagoon, roads, bridges, and more. The U.S Army Corps of Engineers has determined that the levee is not currently eligible for repair or rehabilitation. The extent of the damages in need of immediate repair quickly depleted the City's cash reserves. The City has taken out short-term low interest loans in order to implement emergency protection measures and restore the minimum functionality of critical infrastructure while they seek funding for permanent improvement projects.

It is anticipated that FEMA and NEMA will provide combined grant assistance in an amount between \$1.0M and \$3.0M for the proposed project. However, while FEMA and NEMA have indicated that the project is eligible for grant funding through their federal and state programs, respectively, they were not able to commit to a specific dollar amount before the WSF application was due. Therefore, for the purposes of this application, it is assumed that FEMA and NEMA will contribute a combined \$1.0M of grant funding towards the costs of the proposed project. If FEMA and NEMA provide grant funding in excess of \$1.0M, then the request for financial support from the WSF Program will be proportionately reduced. If the funding sources identified below do not materialize, the City will consider seeking additional sources of grant funding or increase the DWSRF loan amount to complete the project. The City is requesting \$2,441,400 from the Water Sustainability Fund for design, permitting and construction of the new long-term water supply system. The project costs include a connection fee to Auburn BPW, which includes the costs associated with taking up a significant portion of the

existing Auburn BPW treatment capacity, which was pre-built for potential expansion and equates to paying for a share of the treatment facility proportional to the capacity to be indefinitely used by the City.

The City is committed to this project and will fund their share of the project with a DWSRF loan. The City’s letter of financial commitment is included in Attachment A of this application. NDHHS administers the DWSRF program, and has endorsed the project through a Letter of Support, which is included as Attachment A.

Table 12: Cost Share Breakdown

	Cost Estimate	FEMA/NEMA Share	Remaining Costs	WSF Grant Request	Local Cost Share
				60%	40%
Engineering Design and Construction Services	\$667,000	\$131,584	\$535,416	\$321,250	\$214,166
Permitting	\$38,240	\$7,544	\$30,696	\$18,418	\$12,278
Other Professional Services (Administrative, Legal, Fiscal, etc.)	\$128,760	\$25,401	\$103,359	\$62,015	\$41,343
Land Easement Acquisitions	\$150,000	\$29,592	\$120,408	\$72,245	\$48,163
Connection Fee to Auburn BPW	\$750,000	\$147,958	\$602,042	\$361,225	\$240,817
Construction of Long-Term Water Supply System	\$3,335,000	\$657,921	\$2,677,079	\$1,606,248	\$1,070,832
TOTAL	\$5,069,000	\$1,000,000	\$4,069,000	\$2,441,400	\$1,627,600

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

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

The City of Peru is the jurisdiction benefiting directly from this project and has a Comprehensive Development Plan and Zoning Regulations that guides land use,

community infrastructure, and outline goals to maintain public health, safety, and welfare. The water source is the Auburn BPW. Auburn is proactively planning and implementing projects to safeguard the water supply and has multiple plans and an ordinance directed at maintaining a high-water quality resource with plentiful supply:

- 1) City of Auburn, Nebraska – Wellhead Protection (WHP) Plan, NDEE approved 2018
- 2) Auburn Drinking Water Protection Management Plan – NDEE and U.S. EPA accepted July 2018
- 3) City of Auburn Wellhead Protection Ordinance Overlay Zone accepted July 2018
- 4) Auburn Drought Mitigation Plan, ongoing in 2020, supported by the NNRD Multi-jurisdictional Hazard Mitigation Plan

Auburn WHPP and Ordinance - 2018

Auburn BPW's WHP Plan was written and approved by NDEE in 2018, along with a strict land use control ordinance. The WHP Plan and ordinance supports Auburn BPW in preventing contamination of their water supplies. State WHP Program activities include:

- 1) Delineating the zones of influence which may impact public supply wells,
- 2) Inventorying all potential sources of pollution within vulnerable zones,
- 3) Working with local officials to identify options for managing potential pollution sources,
- 4) Developing monitoring plans, and;
- 5) Helping develop contingency plans to provide alternate water supplies and site new wells.

The Nebraska Legislature passed LB 1161 in 1998 (Neb. Rev. Stat. §46-1501 – 46-1509), authorizing the WHP Area Act. The Act sets up a process for public water supply systems, to use if they choose, to implement a local WHP Plan.

The City of Auburn (City) Board of Public Works (BPW) established a new WHP Area in November 2017. This WHP Area was established using both the groundwater 50-year time-of-travel flowlines, along with watersheds of streams that recharge the alluvial aquifer and is called a 'conjunctive delineation' and is unique to Nebraska. This is due to the fact that pollutants in runoff from the watersheds have the potential to contribute pollutants to Auburn's drinking water aquifer. The City has enacted certain restrictions on specific activities occurring within its WHP Area. These existing controls are codified in Auburn Municipal Code Chapter 51.073.

Auburn Drinking Water Protection Management Plan

Also in 2018, Auburn BPW went one step further to protect its water supply by developing a Drinking Water Protection Management Plan (DWPMP) and were the

first water supplier in the United States to complete the plan with U.S. EPA approval. The plan was also approved by NDEE. Goals included:

Goal #1 - Recognize that surface and groundwater resources are interconnected and will support implementation of projects that improve the sustainability of the water supply.

Goal #2: The Auburn BPW will understand how management actions improve water quality, or create a rise in water levels, through a conjunctive water monitoring network.

Goal #3: The Auburn BPW will take necessary actions to reverse increasing nitrate contamination trends in existing wells and maintain a nitrate level below the current USEPA MCL of 10 ppm.

Goal #4: The Auburn BPW will ensure that the water system is resilient to drought by acting to promote groundwater recharge and ensure that the groundwater resources are not overused.

Goal #5: The Auburn BPW will work with the NNRD, NRCS, and other resource agencies to work towards meeting Best Management Practice (BMP) installation targets identified within this Plan.

NNRD Multi-jurisdictional Hazard Mitigation Plan

Auburn Drought Management Plan (ongoing)

As mentioned, the Auburn BPW is currently working with the Nemaha Natural Resources District (NNRD), JEO, and LRE on a drought plan, a component of the NNRD Multi-jurisdictional Hazard Mitigation Plan. Work on the drought plan included use of a groundwater model to evaluate effects on the wellfield under a prolonged drought. The modeling concluded that the Little Nemaha River alluvial aquifer, which is the source of the Auburn BPW water supply, has an adequate supply for up to at least 200 Million Gallons per Year (MGY), even during prolonged drought conditions. This capacity is sufficiently large enough to meet the existing 100 MGY Auburn demand and the existing 50 MGY Peru demand, with additional capacity for system growth. The drought plan will outline specific action steps that Auburn BPW can enact to ensure an adequate water supply, even during periods of severe drought events.

Peru HMP Goals (ongoing)

Within Peru's community section of the NNRD the following applicable projects have been listed:

- 1) Community Education and Awareness – outreach, distribution of maps, etc. to bring attention to the threats of natural hazards to the community.

- 2) Flood-Prone Property Acquisition or Mitigation – voluntary acquisition and demolition of flood prone properties or elevating properties.
- 3) Lagoon Improvements – Building a flood control berm around the wastewater lagoons.
- 4) Long-term Sustainable Water Supply – Evaluation of new wells or connection to another water system.

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.

Repetitive flood damages along the Missouri River is a major statewide problem. This took on a heightened importance after the catastrophic March 2019 flood event. Damage was widespread and impacted roads, agricultural property, and community infrastructure. In response, Governors from Nebraska, Iowa, Kansas, and Missouri collaborated to improve the resiliency of the lower Missouri River Basin through a partnership with the U.S. Army Corps of Engineers on a Planning Assistance to States (PAS) study. By removing the need to rebuild the Peru's wellfield and water treatment plant, critical municipal infrastructure is removed from the floodplain. This project supports the best flood mitigation alternative, removal, and would be a major step towards improving resiliency within the Missouri River Basin.

The population benefiting from the proposed project includes Peru residents and property owners (population 994), students and staff of Peru State College, and visitors to the college and community events.

One benefit to the state is achieving goals listed in the 2019 State Hazard Mitigation Plan including:

Goal 2: Reduce or eliminate long term risk to property and/or the environment.

Objective 2.2: Collaborate with NeDNR to utilize FEMA funding to mitigate against flooding hazards.

Objective 2.4: Provide counties/communities with technical assistance on repetitive loss areas and ways to mitigate future damages.

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.

The City of Peru experienced extensive damage as a result of the 2019 Missouri River flooding and levee breach, which included damage to critical infrastructure, such as the City's water supply wells, water treatment plant, wastewater treatment lagoon, roads, bridges, and more. The U.S Army Corps of Engineers has determined that the levee is not currently eligible for repair or rehabilitation. The extent of the damages in need of immediate repair quickly depleted the City's cash reserves. The City has taken out short-term low interest loans in order to implement emergency protection measures and restore the minimum functionality of critical infrastructure while they seek funding for permanent improvement projects.

It is anticipated that FEMA and NEMA will provide combined grant assistance in an amount between \$1.0M and \$3.0M for the proposed project. However, while FEMA and NEMA have indicated that the project is eligible for grant funding through their federal and state programs, respectively, they were not able to commit to a specific dollar amount before the WSF application was due. Therefore, for the purposes of this application, it is assumed that FEMA and NEMA will contribute a combined \$1.0M of grant funding towards the costs of the proposed project. If FEMA and NEMA provide grant funding in excess of \$1.0M, then the request for financial support from the WSF Program will be proportionately reduced. If the funding sources identified below do not materialize, the City will consider seeking additional sources of grant funding or increase the DWSRF loan amount to complete the project. The City is requesting \$2,441,400 from the Water Sustainability Fund for design, permitting and construction of the new long-term water supply system. The project costs include a connection fee to Auburn BPW, which includes the costs associated with taking up a significant portion of the existing Auburn BPW treatment capacity, which was pre-built for potential expansion and equates to paying for a share of the treatment facility proportional to the capacity to be indefinitely used by the City.

The City is committed to this project and will fund their share of the project with a DWSRF loan. The City's letter of financial commitment is included in Attachment A of this application. NDHHS administers the DWSRF program, and has endorsed the project through a Letter of Support, which is included as Attachment A.

Table 13: Cost Share Breakdown

	Cost Estimate	FEMA/NEMA Share	Remaining Costs	WSF Grant Request	Local Cost Share
				60%	40%
Engineering Design and Construction Services	\$667,000	\$131,584	\$535,416	\$321,250	\$214,166
Permitting	\$38,240	\$7,544	\$30,696	\$18,418	\$12,278
Other Professional Services (Administrative, Legal, Fiscal, etc.)	\$128,760	\$25,401	\$103,359	\$62,015	\$41,343
Land Easement Acquisitions	\$150,000	\$29,592	\$120,408	\$72,245	\$48,163
Connection Fee to Auburn BPW	\$750,000	\$147,958	\$602,042	\$361,225	\$240,817
Construction of Long-Term Water Supply System	\$3,335,000	\$657,921	\$2,677,079	\$1,606,248	\$1,070,832
TOTAL	\$5,069,000	\$1,000,000	\$4,069,000	\$2,441,400	\$1,627,600

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.

Local jurisdictions play a key role in floodplain management. The ultimate flood mitigation alternative is removal of infrastructure or structures completely away from the risk zone. By connecting to the Auburn BPW water supply system, Peru is removing that risk completely and restoring the natural function of the Missouri River floodplain, a key function of watershed health, and a major goal of the USACE, State of Nebraska, and other agencies. The watershed containing the wells and water treatment plan is the Buck Creek Watershed (HUC 102400050101).

This project will not have a negative effect on the Little Nemaha River watershed, the new proposed source of water to Peru.

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.

NeDNR Annual Report and Plan of Work - 2019

In 2019 the NeDNR completed the most current Annual Report and Plan of Work². The NeDNR utilizes several of its program areas to implement the state water planning and review process. Six of the six implementation objectives identified in the Annual Plan of Work will be addressed through this project. They include:

- 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;**

During the alternative's assessment completed by Peru for selecting a long-term water supplier, NeDNR well logs, UNL CSD test holes, NNRD AEM, and other data sets were used. Much of this data is provided by NeDNR or collected through efforts supported by NeDNR.

- 2) Provide staff and resources to support planning and implementation of water resources projects;**

Should the WSF application be approved, NeDNR staff will assist with the funding administration and provide administrative support in completing the water transfer permit.

The Nebraska Emergency Management Agency (NEMA) has provided staff to work with the City of Peru, Auburn BPW, FEMA, and Peru's contractor.

- 3) Support locally developed water management plans for conjunctively managing hydrologically connected groundwater and surface water supplies;**

NNRD is in the process of developing its first Integrated Management Plan (IMP). This plan is in collaboration with NeDNR. Auburn's water source is groundwater under the influence of surface water, or connected by hydrogeological features. It is anticipated that the IMP will outline goals to ensure the Little Nemaha River is managed conjunctively, ensuring an adequate water supply is available for municipal and agricultural uses.

- 4) Provide resources to map and identify areas vulnerable to flood damage;**

A preliminary National Flood Insurance Map was produced by FEMA on 8/2/2019 following the March 2019 flood event. State resources were utilized to support

² NeDNR. Annual Report and Plan of Work for the State Water Planning and Review Process. September 2019.

mapping. State resources were also utilized during development of the NNRD Hazard Mitigation Plan, which list critical infrastructure and focuses on mitigation of critical infrastructure vulnerable to flood damage, including Peru's existing water system.

5) Participate in interagency collaboration with federal agencies, state agencies, local natural resources districts (NRD's), and other water interest entities on various water resources programs and projects; and

Following the flooding, a multi-jurisdictional group of agencies collaborated on an immediate response to restore water service to Peru by continually hauling treated water by the truckload from the City of Auburn to the City's distribution system from March 2019 to July 2019. This water was pumped into the water tower using a fire truck and distributed to the community with a boil order for nearly 5 months. NEMA, FEMA, Peru, Auburn BPW, NNRD, NDEE, NDHHS, and JEO Consulting Group were all actively working on this temporary water supply solution.

Since that time, these agencies have continued collaboration on a long-term solution. They have selected a preferred alternative and are now working on obtaining funding for a long term solution.

6) Consolidate and present information in a form that is understandable and useful to the public and interagency collaborators.

Peru has provided weekly updates to its citizens through the community website. Peru, NEMA, and FEMA have participated in coordination meetings nearly every week since the flood occurred. A townhall meeting was held on June 27, 2019, to discuss long-term water supply solutions. This meeting had significant attendance from the public and government officials. Peru utilized presentations provided by JEO to educate the public about the selection process. Monthly updates were provided by JEO at subsequent council meetings.

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.

Under the federal Safe Drinking Water Act (SDWA), the City of Peru has a legal and fiduciary responsibility to maintain a dependable and adequate supply of safe

water to their customers. Therefore, actions to put a long-term sustainable water supply in place for the community is considered a federal mandate.

The SDWA recognizes the people of Peru are entitled to expect their drinking water is safe. It provides for the protection of human health and prevents drinking water health hazards through the control and regulation of drinking water systems and drinking water testing. In a municipal context, a drinking water system includes all supply, treatment and storage facilities and distribution pipes usually up to customer property lines.

The project would provide Peru and Peru State College with a reliable water source that is compliant with the water quality standards of the SDWA. This project furthers the goals set forth by the NeDNR and NRC WSF “by rehabilitation or restoration of water supply infrastructure, new water supply, infrastructure, or water supply infrastructure maintenance or flood prevention for protection of critical infrastructure.”