PROJECT PROPOSAL FOR BUREAU OF RECLAMATION FUNDING
ANNOUNCEMENT NO. BOR-DO-20-F002

EAST CENTRAL REGIONAL WATER DISTRICT
DROUGHT RESILIENCY PROJECT FOR FISCAL YEAR 2021

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TECHNICAL PROPOSAL

1.0 EXECUTIVE SUMMARY

1.1 Applicant Information
Date: August 5th, 2020
Applicant Name: East Central Regional Water District (ECRWD)
City: Thompson
County: Grand Forks
State: North Dakota
UEI: 130634223 / 02KJ6

1.2 Project Summary
ECRWD proposes to construct 9-miles of 12-inch diameter raw water transmission pipeline between Larimore, ND and the ECRWD Water Treatment Plant (WTP). This raw water pipeline is supported by the ECRWD Long-Term Water Supply Drought Mitigation and Supply Redundancy Plan and is currently ECRWD’s highest priority effort. This project would provide ECRWD with access to an additional 500 acre-feet (ac-ft) of raw water supply (22.60% supply increase) from the Elk Valley Aquifer. The Elk Valley aquifer is a relatively thin glacial aquifer and is at or near full appropriation. Access to this additional supply would be achieved by relying on the already established wells belonging to the City of Larimore, which are no longer in use. The perfected water permit associated with these wells is the most senior, priority date water permit in the aquifer. The most significant multi-year droughts that have occurred within the Elk Valley aquifer were in the 1930’s, and again in 1988-1992 at which time the average level below land surface of the aquifer dropped by 4 feet. Based on hydrologic cycles it is a major concern to ECRWD that another significant drought will occur before the year 2040. ECRWD’s sole purpose is to assure that potable water needs can always be met for the region they serve, access to the most senior priority date permit in the Elk Valley Aquifer will provide ECRWD with stability in maintaining their purpose.

The proposed project accomplishes the goals of this FOA by; increasing the reliability of water supply through infrastructure improvements for ECRWD and its consecutive users, serves as a steppingstone towards building long-term resilience to drought, and reduces the need for emergency response actions. ECRWD plans to fund their share of the proposed project through monetary in-kind contributions from their reserves.

ECRWD has completed an environmental assessment and design for the proposed project. Furthermore, ECRWD has facilitated efforts that are scheduled to secure all necessary permits and approvals prior to August 2021. Construction of the proposed project is scheduled to begin 45 days after funding approval and be complete prior to August 2022. This project is not located on a Federal Facility.
2.0 PROJECT LOCATION
The project is located in eastern North Dakota between the City of Larimore and the ECRWD WTP, located 6-miles southeast of Larimore.

3.0 TECHNICAL PROJECT DESCRIPTION
3.1 Technical Description of Project
ECRWD and the City of Larimore have an agreement in place for ECRWD to utilize the existing wells and raw water permit appropriations, owned and held by Larimore, in the Elk Valley Aquifer to increase supply to ECRWD and its consecutive users.

The project will begin at the existing City of Larimore well line, located within city limits on the southern edge of town. The pipeline will have a capacity of up to 700 gallons per minute (gpm)
and will have 59 feet of headloss through the 9-miles of pipeline. A new HDPE DR-13.5 tee and two DR-26 IPS PVC couplers will be used to tie-into the existing well line. Two types of pipeline material will be used to construct the 9-mile pipeline from the Larimore to the ECRWD WTP. The open-cut portion of the pipeline will consist of 12-inch SDR 26 PVC and will be installed by an excavator and restored with a bulldozer. All roads and railroads will be bored with a directional drilling machine which will install fused 12-inch DR 13.5 IPS HDPE pipe.

While most of the project will include the installation of new pipeline from City of Larimore to the ECRWD WTP, minor renovations will be required to the existing wells owned by Larimore. The wells do not have adequate pressure to accommodate for the 150 feet of total dynamic head (TDH) back pressure required at the existing ECRWD WTP, nor the 59 feet of headloss through the 9-miles of 12-inch pipeline. The existing wells have a discharge head of 145 feet of TDH but will require 209 feet of TDH to overcome headloss and backpressure. The existing wells will require an additional 4 pump bowls added to each well to be able to adjust for the increase in head pressure. The additional 4 pump bowls will require an increase of the pump horsepower (hp) from 7.5 hp to 15 hp. The additional horsepower will require new 15 hp motors at each of the wells along with upgrades to the overload module at the control panel for the 3 existing wells.

The renovations to the wells will allow ECRWD to obtain 500 gpm instantaneously, and 500 ac-ft annually from the existing Larimore wellfield. The additional water will increase annual permit capacity by 22% and increase instantaneous flow by 20%.

ECRWD currently operates 15 wells, under 7 perfected permits, with a total output of 1,900 gpm. However, the existing ECRWD WTP has a capacity of 2,250 gpm. The existing ECRWD wells are not adequate to meet full treatment capacity.

3.2 Technical Description of Aquifer Sensitivity and Water Rights

The Elk Valley Aquifer spans approximately 115,000 acres in northwestern Grand Forks county. The NDSWC has appropriated a total of 21,257 ac-ft as perfected water permits in the aquifer, 8.05% of the total appropriation is held by ECRWD.

Figure 2 below illustrates the ground water appropriations over time in the Elk Valley aquifer. The dark-blue shaded area represents the sum of perfected permit ac-ft of ground water, is plotted in order of earliest most senior priority permit date, and the cumulative sum of volume approved with each additional perfected permit. The dashed lines represent percentages at which the aquifer would have to be compromised to impact ECRWD’s priority position to draw water from the aquifer. For example, if the Elk Valley aquifer became 78% compromised, ECRWD would lose access to 700 ac-ft of their perfected permit capacity. Each dashed line represents a scenario where the Elk Valley aquifer becomes X percent compromised, in-turn costing ECRWD access to a more senior permit in the aquifer. In summary, the dark-blue shaded area above any one dashed line represents the volume in the aquifer that becomes
inaccessible under each scenario. Note that the chart starts at the year 1915 for graphical purposes only and no permits were issued prior to June 1st, 1918, which is the priority date for the permit held by the City of Larimore.

Figure 2: Elk Valley Aquifer Permit Priority dates and Impact to ECRWD of "X" Percent Compromised Scenario.

In the state of North Dakota, the most protected form of having a permit to draw water from an aquifer is under the Perfected status. In addition to permit status, a water permit is assigned a priority date which is based off when the permit was approved. The single permit held by the City of Larimore has the most senior priority date in the Elk Valley Aquifer. This means that in times of a drought or any other condition causing the aquifer to become compromised, the City of Larimore would be the last permit holder to have their allocation partially or completely scaled back. Based on total acre-feet, the Elk Valley aquifer would need to become 98% compromised before the permit held by the City of Larimore would be in question. The permit in the City of Larimore’s name can be easily transferred into ECRWD’s name, though this would not be necessary being Larimore is a contracted consecutive user of ECRWD.

3.3 Technical Description of ECRWD and Consecutive Users

ECRWD is formerly known as Grand Forks-Traill Water District (GFTWD) and Traill Rural Water District (TRWD). ECRWD has facilitated regionalization efforts over the past several years to create financial and operational efficiencies, and more importantly redundant supply plans for
the small communities and neighboring rural water systems in the area that are all reliant on ground water.

Figure 3: ECRWD - Current Consecutive Users and Service Area

ECRWD serves about 60% of TRWD which makes up the southern half of ECRWD. In addition to the TRWD system, ECRWD also serves a portion of Agassiz Water Users District (AWUD) and the
City of Larimore. TRWD, AWUD, and Larimore have their own perfected permit allocations from the Page, Inkster and Elk Valley aquifers respectively; but regionalization efforts in this region have incorporated infrastructure such that these systems are all tied together. ECRWD serves this whole area because it owns and operates the most centralized WTP, can produce the highest quantity and quality of water, and ultimately has the lowest cost to produce the water. These are the reasons ECRWD has become the main hub for supply to the systems and communities in this region. Many benefits have been realized for all those involved in terms of lesser O&M costs and higher quality potable water. Figure 3 provides a pictorial summary of the above description of the how the raw water supply from the Elk Valley aquifer is regionally managed and supplied.

4.0 PERFORMANCE MEASURES
ECRWD will annually monitor water usage, update projected usage, and compare to permit capacity and aquifer levels. Figure 4 below shows the total amount of raw water ECRWD needed in 2019 to meet demands, and reasonable growth projections requiring additional supply within the current service area until the year 2030.

Figure 4: Current and Future Raw Water Needs Compared to Current Available Permit Capacity, and Compared to Permit Capacity Achieved by Proposed Project Under Non-Drought Conditions

Figure 4 also illustrates the forecasted relationship between available raw water supply and demands over the next 10-years as is summarized by the following statements. Comparison of the dark-blue, dashed line representing ECRWD’s perfected permit capacity (1712 ac-ft), and the sum of the expected raw water needs represented by the stacked bars, shows that around the year 2022, ECRWD will likely experience a shortfall in raw water supply from the Elk Valley aquifer. Comparison of the dark-red, dashed line which represents ECRWD’s current perfected permit capacity plus the 500 ac-ft of permit capacity from the Larimore permit, with the
stacked bars shows that over the next 10-years ECRWD would be able to meet the demands of its current service area.

ECRWD will update the data in represented in Figure 4 on an annual basis to assist in future long-range supply and redundancy planning efforts. This will provide ECRWD with the ability to continuously quantify benefits of the additional supply for the region.

5.0 EVALUATION CRITERIA Application Evaluation Scoring Criteria (Answers seen in black)

E.1.1 Evaluation Criterion A – Project Benefits (40 Points)

- How will the project build long-term resilience to drought? How many years will the project continue to provide benefits? ECRWD will have infrastructure and access to the permit with the most senior priority date in the Elk Valley aquifer. The aquifer would need to be 98% compromised before this permit would become affected (Refer to Figure 2). The project will provide benefits to ECRWD for every year after implementation, but more specifically based on current demand growth projections the additional 500 ac-ft will provide surplus raw water supply until the year 2031. See Figure 5 below.

Figure 5: 20-Year Relationship Between ECRWD Raw Water Supply from the Elk Valley Aquifer and Projected Increase in Demands

- Will the project make additional water supplies available? Yes, the project will provide ECRWD with access to the most senior permit in the aquifer.
  - If so, what is the estimated quantity of additional supply the project will provide and how was this estimate calculated? Provide this quantity in acre-feet per year
as the average annual benefit over ten years (e.g., if the project captures flood flows in wet years, provide the average benefit over ten years including dry years). An additional 500 ac-ft per year will become available. This value is equal to the approved permit allocation of the most senior water permit, held in the City of Larimore’s name, in the Elk Valley aquifer. The average annual benefit over ten years this additional supply will provide is equal to 500 ac-ft per year.

- What percentage of the total water supply does the additional water supply represent? How was this estimate calculated? The additional 500 ac-ft will represent 22.60% of the total permit allocation available to ECRWD. This estimate was calculated by dividing the 500 ac-ft additional supply by the sum of current supply (1712 ac-ft per year) and the 500 ac-ft per year of additional supply. The equation is as follows: 

\[
\text{Total Supply} = \text{Current Supply} + \text{Additional Supply} = 1712 \text{ ac-ft} + 500 \text{ ac-ft} = \text{Total} \text{ Supply}
\]

\[
\text{Percentage of Additional Supply} = \frac{500 \text{ ac-ft}}{1712 \text{ ac-ft} + 500 \text{ ac-ft}} = 22.60\%.
\]

- Provide a brief qualitative description of the degree/significance of the benefits associated with the additional water supplies. The 500 ac-ft per year of additional supply will allow ECRWD to meet the essential demands of rural communities, farmsteads and agricultural industries 10-years further into the future than the current permitted raw water supply allows. It is projected that by year 2022, ECRWD will exceed their existing permit and will not be able to supply any additional needs of its consecutive users. Therefore, the additional water supply not only plays a huge significance now for protection in the instance of a drought, but also well into the future. This is primarily because the permit is the most senior permit in the aquifer and would be the last to be cut if a drought was to occur.

Will the project improve the management of water supplies? For example, will the project increase efficiency, increase operational flexibility, or facilitate water marketing (e.g., improve the ability to deliver water during drought or access other sources of supply)? Yes, the project will increase operational flexibility during drought years and will also increase daily operational efficiency of the system. The renovations to the wells will allow ECRWD to obtain 500 gpm instantaneously and 500 ac-ft annually from the existing Larimore wells. The additional water will increase annual permit capacity by 22% and increase instantaneous flow by 20%. ECRWD currently operates 15 wells with a total output of 1,900 gpm. The existing ECRWD WTP has a capacity of 2,250 gpm, therefore the existing wells are not adequate to meet full treatment capacity. The addition of the pipeline does not only help protect against drought, it also provides operational flexibility and increased flow for treatment capacity. Essentially ECRWD will more efficiently be able to meet peak demands, while having the flexibility to rehab their existing wells. Currently, during peak demands ECRWD does not have the ability to pull wells for cleaning or repair, because all wells are needed to meet peak demands.

- If so, how will the project increase efficiency or operational flexibility? The project will increase efficiency by allowing ECRWD to run their existing well pumps at lesser pumping rates to meet average and peak day demands, this also
keeps the pumps from sucking air or cavitating. Due to current raw water infrastructure capacity limitations, the pumps must operate at maximum drawdown, providing little room for error. The project will also increase operational flexibility by having the ability to rely on an additional location for water supply. In the instance problems arise such as a loss of power or the existing raw water pipeline becomes compromised, the new water supply would allow ECRWD to still be able to produce water until the compromised wells or pipeline was fixed.

○ What is the estimated quantity of water that will be better managed as a result of this project? How was this estimate calculated? Provide this quantity in acre-feet per year as the average annual benefit over ten years (e.g., if the project captures flood flows in wet years, provide the average benefit over ten years including dry years). It is estimated that 2,212 ac-ft of water will be better managed as a result of this project. This was calculated by taking the sum of the current quantity of water from the Elk Valley Aquifer managed by ECRWD and the quantity of water assigned to the City of Larimore’s perfected permit. This calculation is as follows: 1,712 ac-ft + 500 ac-ft = 2,212 ac-ft. The average annual benefit over ten years will be 500 ac-ft per year.

○ How will the project increase efficiency or operational flexibility? The project will increase efficiency by allowing ECRWD to run their existing well pumps at lesser pumping rates to meet average and peak day demands, this also keeps the pumps from sucking air or cavitating. Due to current raw water infrastructure capacity limitations, the pumps must operate at maximum drawdown, providing little room for error. The project will also increase operational flexibility by having the ability to rely on an additional location for water supply. In the instance problems arise such as a loss of power or the existing raw water pipeline becomes compromised, the new water supply would allow ECRWD to still be able to produce water until the compromised wells or pipeline was fixed.

○ What percentage of the total water supply does the water better managed represent? How was this estimate calculated? The percentage of the total water supply better managed is equal to 100%. This was calculated by (1712 ac-ft + 500 ac-ft) / (1712 ac-ft + 500 ac-ft) = 100%.

○ Provide a brief qualitative description of the degree/significance of anticipated water management benefits. The 500 ac-ft assigned to the perfected Larimore permit is not currently in use because since late 2019 Larimore began receiving finished water from ECRWD and decommissioned their own WTP. Therefore, there is 500 ac-ft that is appropriated and not in use in an aquifer that is at or near full appropriation according to the NDSWC. ECRWD will be able to add 22.60% to their total raw water permit and 20% of instants permitted usage within the Elk Valley aquifer which will allow ECRWD to better manage their entire raw water supply from the Elk Valley Aquifer.
Will the project make new information available to water managers? If so, what is that information and how will it improve water management? Yes, water managers will be able to use the NDSC water permit database to view the updated annual volume ECRWD is utilizing from the Elk Valley aquifer.

- Will the project have benefits to fish, wildlife, or the environment? If so, please describe those benefits. No

- If the proposed project includes any of the following components, please provide the applicable additional information:
  - Salt Water Barriers – N/A
  - Wells – While most of the project will include the installation of new pipeline from City of Larimore to the ECRWD WTP, minor renovations will be required to the existing wells owned by Larimore. The wells do not have adequate pressure to accommodate for the 150 feet of TDH back pressure required at the existing ECRWD WTP, nor the 59 feet of headloss through the 9-miles of 12-inch pipeline. The existing wells have a discharge head of 145 feet of TDH but will require 209 feet of TDH to overcome headloss and backpressure. The existing wells will require an additional 4 pump bowls added to each well to be able to adjust for the increase in head pressure. The additional 4 pump bowls will require an increase of the pump hp from 7.5 hp to 15 hp. The additional horsepower will require new 15 hp motors at each of the wells along with upgrades to the overload module at the control panel for the 3 existing wells.

  The renovations to the wells will allow ECRWD to obtain 500 gpm instantaneously, and 500-ac ft annually from the existing Larimore wellfield. The additional water will increase annual permit capacity by 22% and increase instantaneous flow by 20%.

  ECRWD currently operates 15 wells, under 7 perfected permits, with a total output of 1,900 gpm. However, the existing ECRWD WTP has a capacity of 2,250 gpm. The existing ECRWD wells are not adequate to meet full treatment capacity.
  - New Water Marketing Tool or Program – N/A
  - Metering/Water Measurement Projects – N/A
  - Environmental/Wildlife Projects – N/A: The project consists of underground sources, therefore no positive or negative impacts to environment and wildlife.

E.1.2. Evaluation Criterion B – Drought Planning and Preparedness (15 points)
For purposes of evaluating this criterion, please:

- Attach a copy of the applicable drought plan, or sections of the plan, as an appendix to your application. These pages will not be included in the total page count for the application. See Appendix A.
• Explain how the applicable plan addresses drought. Proposals that reference plans clearly intended to prepare for, and address drought will receive more points under this criterion. The ECRWD Long-Term Water Supply Drought Mitigation and Supply Redundancy Plan, attached as Appendix A, addresses drought by focusing on regionalization efforts that are in place or will be constructed in the future to provide rural water systems and small neighboring communities with long-range supply and redundancy plans. ECRWD and its consecutive users realize that being fully reliant on only one aquifer is dangerous if drought conditions are to arise. ECRWD also anticipates that another significant drought period will occur prior to the year 2040.

  o Explain whether the drought plan was developed with input from multiple stakeholders. Was the drought plan developed through a collaborative process? The ECRWD Long-Term Water Supply Drought Mitigation and Supply Redundancy Plan, attached as Appendix A, is a summary of years long efforts to regionalize rural water systems and small communities within the region. There are several contracts in place that allow ECRWD to lead efforts such as this, but the terms of the contract require final approval from all invested consecutive users. The attached plan has not been contested by any entity or individual to date.

  o Does the drought plan include consideration of climate change impacts to water resources or drought? The drought plan highlights an aquifer sensitivity analysis of the Elk Valley Aquifer. It is understood that predicting drought has many variables. Therefore, the sensitivity analysis was completed in order to understand the percent compromised the aquifer would need to become before major impacts were realized. The drought plan also prioritizes supply redundancy through pipeline infrastructure. These priority infrastructure projects rely on more than just the Elk Valley Aquifer.

• Describe how your proposed drought resiliency project is supported by and existing drought plan. ECRWD’s drought plan includes a list of priority efforts to further the long-range supply and supply redundancy for ECRWD and its consecutive users. The proposed project is currently the highest incomplete item on the list.

  o Does the drought plan identify the proposed project as a potential mitigation or response action? Yes.

  o Does the proposed project implement a goal or need identified in the drought plan? Yes.

  o Describe how the proposed project is prioritized in the referenced drought plan? The proposed project is listed as priority effort #5 in the drought plan, which is currently the highest priority infrastructure effort that is incomplete. There are two additional incomplete efforts in the ECRWD drought plan as it is today.

E.1.3 Evaluation Criterion C – Severity of Actual or Potential Drought Impacts to be addressed by the Project (15 points)

• What are the ongoing or potential drought impacts to specific sectors in the project area if no action is taken (e.g., impacts to agriculture, environment, hydropower, recreation and tourism, forestry), and how severe are those impacts? Impacts should be quantified
and documented to the extent possible. For example, impacts could include, but are not limited to:

- **Whether there are public health concerns or social concerns associated with current or potential drought conditions (e.g., water quality concerns including past or potential violations of drinking water standards, increased risk of wildfire, or past or potential shortages of drinking water supplies? Does the community have another water source available to them if their water service is interrupted?).** The potential impacts of drought to ECRWD and its consecutive users include public health and social concerns with water quality decline and shortages in drinking water supplies. The TRWD area of ECRWD would have access to the Page aquifer, and AWUD would have access to the Inkster aquifer. The GFTWD branch of ECRWD and Larimore would not have a backup supply at this time if the Elk Valley aquifer were to become 98% compromised, due to the necessary infrastructure being not yet in place. The permit allocations in the Page and Inkster aquifers assigned to TRWD and AWUD would allow for 98% of the GFTWD branch and Larimore to be served in addition to TRWD and AWUD, based on 2019 usage.

- **Whether there are ongoing or potential environmental impacts (e.g., impacts to endangered, threatened or candidate species or habitat).** There are no ongoing environmental impacts, but if drought were to occur in the Elk Valley aquifer it would certainly mean that environmental impacts occurred ahead of time, we know that the surface waters in the region are affected earlier in a drought than the subsurface waters.

- **Whether there are ongoing, past or potential, local, or economic losses associated with current drought conditions (e.g., business, agriculture, reduced real estate values).** Though there are not current drought conditions in the ECRWD service area, there is certainly potential for major business, agricultural and real estate value losses if drought were to impact the area similar to the way it did in the 1930’s and late 1980’s & early 1990’s. Agricultural businesses would have significant decreases or even zero yields, livestock owners would lose animals due to deficiency in water supply and negative impacts to pastureland, and local residents not able to obtain adequate potable water supply from ECRWD would likely move to urban areas which would cause a significant drop in real estate values.

- **Whether there are other drought-related impacts not identified above (e.g., tensions over water that could result in a water-related crisis or conflict).** Even though the NDSWC appropriates water based on permit priority dates, it could safely be assumed that if drought impacted the Elk Valley aquifer and more junior priority date permit holders were instructed to cease pumping from the aquifer, water-related crisis and conflicts would arise between parties that had adequate infrastructure in place to draw water from the aquifer. Also, with a
decrease in aquifer levels, there could be existing wells, that were able to produce higher yields, that would see a diminished supply due to the decrease in water table and drawdown.

- **Describe existing or potential drought conditions in the project area.**
  - Is the project in an area that is currently suffering from drought or which has recently suffered from drought? Please describe existing or recent drought conditions, including when and the timeframe that the area has experienced drought conditions (please provide supporting documentation, [e.g., Drought Monitor, droughtmonitor.unl.edu]). The most recent drought period on record is 1988-1992 at which time the a 4-foot water level decline was recorded in the Elk Valley Aquifer, refer to the *Climatic and Hydrologic Aspects of the 1988-1992 Drought and the Effect on People and Resources of North Dakota, North Dakota State Water Commission Water Resources Investigation 29, prepared by the U.S. Geological Survey in cooperation with the NDSWC*. Prior to that the last significant drought on record was in the 1930’s. ECRWD is very concerned that another drought is likely to occur in the next 20 years.
  - Describe any projected increases to the severity or duration of drought in the project area resulting from changes to water supply availability. Provide support for your response (e.g., reference a recent climate informed analysis, if available). Based on the NDSWC data used to compile Figure 2, 78% of the appropriations in the Elk Valley Aquifer have occurred since the drought that began in 1988. When drought impacts the Elk Valley Aquifer again, the severity will be worse since more people and businesses are relying on water from the aquifer than were in the previous drought years. It could safely be assumed that water-related crisis and conflict will occur.

**E.1.4. Evaluation Criterion D – Project Implementation (10 Points)**

- Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: design, environmental and cultural resources compliance, permitting, construction/installation.

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Dates/Duration to Complete</th>
<th>Cost Share Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental and Cultural Assessment</td>
<td>Completed by 7/31/2020</td>
<td>None</td>
</tr>
<tr>
<td>Final Design</td>
<td>Completed by 7/17/2020</td>
<td>None</td>
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<tr>
<td>Secure Permits and Easements</td>
<td>8/1/2020 to 7/31/2020</td>
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<tr>
<td>Task Description</td>
<td>Duration</td>
<td>Required</td>
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<tr>
<td>------------------------------------------------------</td>
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<tr>
<td>Formal Advertisement, Bid Opening, Contract Award, Submittal Review, &amp; Notice to Proceed</td>
<td>Complete within 45 days after funding approval</td>
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<tr>
<td>Mobilize to project site</td>
<td>30 Days</td>
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<td>Complete Directional Bores required</td>
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<td>Complete Railroad Bore required</td>
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<tr>
<td>Install pipe from STA 0+00 to STA 488+90</td>
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<tr>
<td>Install Gate Valves and Blow offs</td>
<td>2 Days</td>
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<td>Complete Tie-in Connection at Larimore</td>
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<td>Fill Pipeline for pressure testing</td>
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<td>Pressure Test Pipeline</td>
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</tr>
<tr>
<td>Chlorinate and Flush Pipeline</td>
<td>3 Days</td>
<td>Yes</td>
</tr>
<tr>
<td>Complete Tie-in Connection at ECRWD WTP</td>
<td>2 Days</td>
<td>Yes</td>
</tr>
<tr>
<td>Complete restoration of disturbed areas</td>
<td>5 Days</td>
<td>Yes</td>
</tr>
<tr>
<td>Construction Engineering</td>
<td>Duration of Construction &amp; Post-Construction Activity</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Project 100% Complete by August 2022.**

ECRWD has already completed the project design in order to be shovel ready to expedite the schedule to complete this very important project in a timely manner to ensure ECRWD is able continue to serve customers now and into the future.

ECRWD has already completed the environmental and cultural resources assessment to ensure all environmental and culture resources are identified to ensure the project is shovel ready when funding becomes available.

Additionally, ECRWD will have all proper permits and easements in place prior to August 2021 to ensure the project is shovel ready when funding becomes available.

- **Describe any permits that will be required, along with the process for obtaining such permits.** Permits for township road, county road and BNSF railroad crossings will be required. ECRWD will utilize engineering consulting services to assist in permit applications and submission. Temporary construction and permanent right of way easements will be required from landowners along the pipeline alignment. ECRWD will partner with its engineering consultant to obtain these easements. All permits and easements are expected to be secured after July 2020 and prior to August 2021.

- **Identify and describe any engineering or design work performed specifically in support of the proposed project.** ECRWD has hired an engineering consultant to facilitate preliminary engineering, design, bidding and construction administration for this
• Describe any new policies or administrative actions required to implement the project. ECRWD will not need to adopt any new policies but will need to follow any requirements set forth by Reclamation if funding for the proposed project is secured.

E.1.5. Evaluation Criterion E – Nexus to Reclamation (10 points)

• How is the proposed project connected to a Reclamation project or activity? The proposed project is connected to Reclamation activities in that it: is supported by an existing drought planning effort, will build long-term resilience to drought and reduce the need for emergency response actions.
• Will the project benefit any tribe(s)? No tribes in the project area.
• Does the applicant receive Reclamation project water? No.
• Is the project on Reclamation project lands or involving Reclamation facilities? No.
• Is the project in the same basin as a Reclamation project or activity? No.
• Will the proposed work contribute water to a basin where a Reclamation project is located? No, but ECRWD (formerly GFTWD) was awarded grant funding under the WaterSMART Small-Scale Water Efficiency Project for Fiscal Year 2017 and has since completed the installation of the 395 automatic meter read (AMR) systems scheduled under that funding opportunity. The TRWD branch of ECRWD was awarded grant funding under the WaterSMART Small-Scale Water Efficiency Project for Fiscal Years 2015 and 2017. Under these two (2) funding opportunities TRWD was able to complete installation of approximately 776 AMR systems.

E.1.6. Evaluation Criterion F – Department of the Interior and Bureau of Reclamation Priorities (10 points)
Up to 10 points may be awarded based on the extent that the proposal demonstrates that the project supports the Department and Reclamation priorities. Please address those priorities that are applicable to your project. It is not necessary to address priorities that are not applicable to your project. A project will not necessarily receive more points simply because multiple priorities are addressed. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the priority(ies) is well supported in the proposal.

Department of the Interior Priorities
1. Creating a conservation stewardship legacy second only to Teddy Roosevelt
   a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment. Beginning in 2013, ECRWD began investigating efforts with neighboring systems and their consulting engineer to find ways to regionalize the systems and create redundant water supply plans. ECRWD began this activity due to the recent increase in number of people and businesses relying on rural water and having an understanding that without
redundant supplies and having unnecessary infrastructure in operation full-time, set the stage for rural water rates become burdensome to the end user and risk associated with relying on one source of supply if drought or aquifer contamination were to occur.

b. Examine land use planning processes and land use designations that govern public use and access

c. Revise and streamline the environmental and regulatory review process while maintaining environmental standards

d. **Review the Department’s water storage, transportation, and distribution systems to identify opportunities to resolve conflicts and expand capacity.** ECRWD has been the leader in implementing regionalization and redundant water supply plans in northeast North Dakota. Through these efforts they have created relationships between neighboring rural water systems, small communities and large agricultural industries. The establishment and improvement of these relationships has created cohesiveness on planning and implementing for expansion of system capacity and redundant water supply infrastructure.

e. Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands

f. Identify and implement initiatives to expand access to Department lands for hunting and fishing

g. Shift the balance towards providing greater public access to public lands over restrictions to access

2. **Utilizing our natural resources**

a. Ensure American energy is available to meet our security and economic needs

b. Ensure access to mineral resources, especially the critical and rare earth minerals needed for scientific, technological, or military applications

c. Refocus timber programs to embrace the entire “healthy forests” lifecycle

d. Manage competition for grazing resources

3. **Restoring trust with local communities**

a. **Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands**

ECRWD currently has agreements with surrounding towns, and neighboring water districts to be able to best manage water sources now and into the future. ECRWD is also in constant dialogue with irrigators that have irrigation wells surrounding ECRWD wells. When new wells are planned or when ECRWD is looking for additional water sources, ECRWD’s first call is to the local irrigators to make sure they are comfortable with the location of the well. ECRWD strives to build relationships with those in the water world around them.
b. Expand the lines of communication with governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, tribes, and local communities

4. Striking a regulatory balance
a. Reduce the administrative and regulatory burden imposed on U.S. industry and the public
b. Ensure that ESA decisions are based on strong science and thorough analysis.

5. Modernizing our infrastructure
a. Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure
b. Remove impediments to infrastructure development and facilitate private sector efforts to construct infrastructure projects serving American needs
c. Prioritize Department infrastructure needs to highlight:
   (1) Construction of infrastructure
   (2) Cyclical maintenance
   (3) Deferred maintenance

Bureau of Reclamation Priorities

1. Increase Water Supplies, Storage, and Reliability under WIIN and other Authorities
2. Streamline Regulatory Processes and Remove Unnecessary Burdens to Provide More Water and Power Supply Reliability
3. **Leverage Science and Technology to Improve Water Supply Reliability to Communities.** Beginning in 2013, ECRWD began investigating efforts with neighboring systems and their consulting engineer to find ways to regionalize the systems and create redundant water supply plans. ECRWD began this activity due to the recent increase in number of people and businesses relying on rural water and having an understanding that without redundant supplies and having unnecessary infrastructure in operation full time, set the stage for rural water rates become burdensome to the end user and risk associated with relying on one source of supply if drought or aquifer contamination were to occur.

4. Address Ongoing Drought
5. Improve the Value of Hydropower to Reclamation Power Customers
6. **Improve Water Supplies for Tribal and Rural Communities.** ECRWD has been the leader in implementing regionalization and redundant water supply plans in Northeast North Dakota. Through these efforts they have created relationships between neighboring rural water systems, small communities and large agricultural industries. The establishment and improvement of these relationships has created cohesiveness on planning and implementing for expansion of system capacity and redundant water supply infrastructure.

7. Implementation of new Title Transfer authority pursuant to P.L. 116-9
SUPPORT MATERIAL FOR TECHNICAL PROPOSAL

6.0 PROJECT BUDGET

6.1 Funding Plan and Letters of Commitment
The funding plan for the project will be funding through two sources. The funding sources will be ECRWD’s reserve account and the federal cost share through the Bureau of Reclamation. The breakdown of funding is as follows:

**ECRWD:** $162,316.25
- ECRWD has already committed $162,316.25 towards design, bidding, environmental and regulatory compliance, and permit and easement acquisition for this project. The funding is spent and will not be requested as a match for this project.

**ECRWD:** $733,081.25
- The funding for ECRWD is currently available and set aside for this project. There are no constraints on the availability of funds. No contingencies with funding commitment.

**BOR Federal Funding:** $733,081.25
- If federal funding was appropriated for this project, ECRWD is shovel ready and ready to complete this very important project as soon as possible.

6.2 Budget Proposal

*Table 2: Total Project Cost*

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs to be reimbursed with the requested Federal funding (BOR)</td>
<td>$733,081.25</td>
</tr>
<tr>
<td>Costs to be paid by the applicant (ECRWD Reserve)</td>
<td>$733,081.25</td>
</tr>
<tr>
<td>Costs incurred by applicant prior to August 1, 2021 (ECRWD Reserve)</td>
<td>$162,316.25</td>
</tr>
<tr>
<td><strong>Total Project Costs</strong></td>
<td><strong>$1,628,478.25</strong></td>
</tr>
</tbody>
</table>

As mentioned above, ECRWD has contributed and committed a total of $162,316.25 towards the completion of pre-construction activities for the project prior to the date of submission of this report. The expenditures will be fully spent prior to August 1st, 2021 and will not be included in the sum of cost-share expenditures for the project. They are shown as a point of reference of ECRWD’s commitment to this very important project.

Table 3 below provides detail on the anticipated total probable costs for construction and pre-construction activities for the project. These values would be updated post bid opening to reflect the exact dollar amounts associated with construction of the project.
Table 3: Engineer’s Estimate of Total Probable Project Costs

<table>
<thead>
<tr>
<th>ITEM DESCRIPTION</th>
<th>UNITS</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>PRICE</th>
<th>FUNDING</th>
<th>RESERVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Mobilization</td>
<td>l.s.</td>
<td>1</td>
<td>$50,000.00</td>
<td>$50,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>B. Water Main</td>
<td>l.f.</td>
<td>46,490</td>
<td>$18.75</td>
<td>$871,687.50</td>
<td>$435,843.75</td>
<td>$435,843.75</td>
</tr>
<tr>
<td>C. Directional Bores (Includes pipe &amp; couplers)</td>
<td>l.f.</td>
<td>2,400</td>
<td>$70.00</td>
<td>$168,000.00</td>
<td>$84,000.00</td>
<td>$84,000.00</td>
</tr>
<tr>
<td>D. Cased Bore</td>
<td>l.s.</td>
<td>1</td>
<td>$30,000.00</td>
<td>$30,000.00</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>E. Fittings (Includes couplers and POLY pipe to transition from POLY to PVC)</td>
<td>ea.</td>
<td>14</td>
<td>$1,000.00</td>
<td>$14,000.00</td>
<td>$7,000.00</td>
<td>$7,000.00</td>
</tr>
<tr>
<td>F. Tie-Ins to Existing System (Includes couplers, reducers, saddles, tees and flanges)</td>
<td>ea.</td>
<td>3</td>
<td>$5,000.00</td>
<td>$15,000.00</td>
<td>$7,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>G. Gate Valves</td>
<td>ea.</td>
<td>2</td>
<td>$2,000.00</td>
<td>$4,000.00</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>H. 1-Inch Flush/Air Blow Off</td>
<td>ea.</td>
<td>2</td>
<td>$2,000.00</td>
<td>$4,000.00</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>I. Signs</td>
<td>ea.</td>
<td>5</td>
<td>$55.00</td>
<td>$275.00</td>
<td>$137.50</td>
<td>$137.50</td>
</tr>
<tr>
<td>J. Seeding</td>
<td>acre</td>
<td>50</td>
<td>$500.00</td>
<td>$25,000.00</td>
<td>$12,500.00</td>
<td>$12,500.00</td>
</tr>
<tr>
<td>K. Add Bowls and Drives to Existing Larimore Pumps</td>
<td>l.s.</td>
<td>3</td>
<td>$40,000.00</td>
<td>$120,000.00</td>
<td>$60,000.00</td>
<td>$60,000.00</td>
</tr>
<tr>
<td>L. Construction and Post-Construction Engineering</td>
<td>l.s.</td>
<td>1</td>
<td>$150,000.00</td>
<td>$150,000.00</td>
<td>$75,000.00</td>
<td>$75,000.00</td>
</tr>
</tbody>
</table>

**TOTAL CONSTRUCTION COSTS - LARIMORE WELLS TO ECRWD WTP:**

$1,466,162.50

$733,081.25

$733,081.25

**PRE-CONSTRUCTION COSTS**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental (Paid by ECRWD)</td>
<td>$5,700.00</td>
</tr>
<tr>
<td>Easement Acquisition (Paid by ECRWD)</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Design and Bidding (Paid by ECRWD)</td>
<td>$146,616.25</td>
</tr>
</tbody>
</table>

**TOTAL PROBABLE PROJECT COST - LARIMORE WELLS TO ECRWD WTP:**

$1,628,478.75

$733,081.25

$895,397.50

### 6.3 Budget Narrative

As previously discussed, all pre-construction activities except for bidding will be complete prior to August 2021. Therefore, construction contracts for the project will be awarded to a contractor(s) within 45 days of award of funding by Reclamation. That said, the project will be comprised of only contractual items meaning that; **Salaries and Wages, Fringe Benefits, Travel, Equipment, and Materials and Supplies** will all be included in the bid prices received in the competitive procurement process. A total of three separate contracts will be executed under this project; one for an underground contractor, the second for a well driller, and the third for the engineer. The construction contracts for the underground construction and work on the existing wells will be procured by a competitive procurement method. **ECRWD recently completed a qualifications-based procurement for engineering services for the above-mentioned project.**

There will be no **Third-Party In-Kind Contributions, Other Expenses, nor Indirect Costs.** Any additional **Environmental and Regulatory Compliance Costs** beyond those incurred prior to July 31, 2020 will be included in the updated post-bid summary of total project costs. **ECRWD completed an environmental assessment and cultural resource inventory for this project.** The report summarizing the findings is attached as Appendix C in this report.
7.0 ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE (Answers seen in black)

The Environmental and Cultural Resources Compliance report completed in July 2020 is attached as Appendix C.

- Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts. The North Dakota Department of Health and Consolidated Laboratories (NDDHCL) will be contacted to address concerns relative to dust emissions, minimal disturbance and re-vegetation of waterway banks and beds, prevention of spills into waterways, and reported spills that may affect groundwater supplies. The project will primarily be installed within farm fields. All water sources will be horizontally tunneled to ensure no intrusion of the water source.

- Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activates associated with the proposed project? Compliance with the National Environmental Policy Act, Fish and Wildlife Coordination Act, Endangered Species Act, and Clean Water Act will be initiated by the lead agency. Maps and other information will be provided to determine the environmental impacts of the proposed project. Contact with the North Dakota Game and Fish Department will be made to address concerns relative to minimizing impacts to habitat, avoidance and protection of wetlands, and impacts to woodlands and native prairie areas.

- Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States?” If so, please describe and estimate any impacts the proposed projects may have. N/A

- When was the water delivery system constructed? 1972

- Will the proposed project result in any modifications of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously. None. ECRWD will work with local irrigators to ensure the pipeline does not affect irrigation systems.

- Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question. The project has completed a Class III cultural resource inventory report and the routing and project has been approved by ND SHPO. It is anticipated no buildings, structures, or features will be disturbed during construction of this project. No buildings, structures, or features in the project area are listed within the National Register of Historic Places. However, to ensure the primary funding agency will be the lead agency, an updated cultural resources survey may be necessary. ECRWD will work
with that agency throughout the project, discussing the project in detail with the required environmental personnel. The North Dakota State Historical society will be contacted regarding recommendation on the level of cultural resource investigations to be completed for all pipeline routes. Class I and Class III Cultural Resources Investigations will most likely be recommended. Should a historical or culturally significant site be identified, the project components in that area will be re-routed to minimize or eliminate any disturbance.

- **Are they any known archeological sites in the proposed project area?** The project has completed a Class III cultural resource inventory report and the routing and project has been approved by ND SHPO. No archeological sites will be disturbed during construction of this project. No archeological sites in the project area are listed within the project area. However, to ensure the primary funding agency will be the lead agency, an updated cultural resources survey may be necessary. ECRWD will work with that agency throughout the project, discussing the project in detail with the required environmental personnel. The North Dakota State Historical society will be contacted regarding recommendation on the level of cultural resource investigations to be completed for all pipeline routes. Class I and Class III Cultural Resources Investigations will most likely be recommended. Should a historical or culturally significant site be identified, the project components in that area will be re-routed to minimize or eliminate any disturbance.

- **Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?** Efforts will be made to minimize impacts to minority or low-income populations, however, depending on funding; impacts could range from minimal to severe. The EPA uses a goal to provide a water bill of less than 2.0% of the median household income; all efforts will be made to achieve this goal. However, if a drought was to occur, and ECRWD was not able to provide water to its customers, the financial impact would be much greater than the financial implication of the said project.

- **Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on Tribal lands?** No tribal lands are located within the project area.

- **Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?** The installation of the pipeline is predominantly through areas of cultivated farmland and will not cause any long-term effect on the land use to include spread of noxious weeds. The anticipated width of disturbance for construction of the pipeline is between 50 and 75 feet in width. The area disturbed will likely be out of production for one season assuming that construction occurs prior to harvest of crops. Topsoil along the pipeline routes will be removed during construction activities and replaced to minimize the
impact on prime farmlands. There will be no farmland taken out of production for more than a year during this proposed project.

8.0 REQUIRED PERMITS OR APPROVALS
The only permits required for the project are township road, state highway and BNSF railroad crossing permits. Additionally, ECRWD will need to obtain signature for Pipeline Right-of-Way Easements. ECRWD will utilize services from their engineering consulting firm to obtain the proper permits, easements, and approvals for installation of the pipeline. All permits, easements and approvals will be secured prior to August 2021.

9.0 EXISTING DROUGHT CONTINGENCY PLAN
See attached Appendix A – ECRWD Long-Term Water Supply Drought Mitigation and Supply Redundancy Plan.

10.0 LETTERS OF SUPPORT
ECRWD does not have any letters of support specific to this project. Mutual understanding between stakeholders on their reliance of ECRWD’s leadership is acknowledged by existing contracts. Advancement of plans and efforts for the region to further its long-range water supply and supply redundancy plans under leadership of ECRWD are within the bounds of existing contracts.

11.0 OFFICIAL RESOLUTION
See attached Appendix B.
ECRWD Long-Term Water Supply Drought Mitigation and Supply Redundancy Plan

Last Updated: June 5th, 2020

Executive Summary:
East Central Regional Water District (ECRWD) has adopted a plan to systematically forecast, invest, and communicate with stakeholders’ objectives developed to build infrastructure. These objectives will provide additional and redundant, raw and finished, water supply needs to the system and its consecutive users. ECRWD is committed to mitigating impacts of shortfall in supply that may be caused by drought and/or demands exceeding projections of the system. The overarching goal of ECRWD is to assure that needs can always be met for users of the system.

This document is intended to share information with all consecutive users and stakeholders of ECRWD. This document will continue to be updated as additional efforts become implemented to; monitor drought conditions and potential impacts, increase supply and redundancy to the region.

Drought Indicators, Defined Stages and Response Strategies:
ECRWD’s manager is responsible for monitoring drought conditions. The manager uses the following metrics to monitor drought conditions in order to determine severity:
- Local Precipitation Records from the North Dakota Agricultural Weather Network - ndawn.ndsu.nodak.edu/rainfall
- Static Water Level – level of the water table in a when the pump is off
- Stream Flow Records from USGS - waterdata.usgs.gov
- Standard Precipitation Index through the National Drought Mitigation Center - droughtmonitor.unl.edu

ECRWD’s manager is responsible for understanding when information obtained from the above sources classifies a drought as any of the following stages below:
- Normal Conditions – Adequate water supply and acceptable water quality
- Drought Watch – Deterioration in water quantity/quality may be experienced
- Drought Warning – Water supplies are insufficient to meet all demands
- Drought Emergency – Water system failure can be expected

Below is a general outline of response strategies the ECRWD will use respective to the defined stages above:
- Normal Conditions
  - ECRWD annual newsletter sent to all users
If ECRWD notices unusually high meter readings, system personnel will contact the customer to assist in determining the reason for the month’s high-water use.

ECRWD will replace water meters after they are 20 years old to maintain metering accuracy.

ECRWD will strive to educate its customers to practice on-going water conservation techniques.

- **Drought Watch**
  - ECRWD may strive for a 10% reduction in system water use.
  - ECRWD may enforce lawn watering restrictions.
  - ECRWD may encourage collection and storage of rainwater for gardens and landscape plants.

- **Drought Warning**
  - ECRWD may strive for a 20% reduction in system water use.
  - ECRWD may enforce a 20% reduction in water use to take affect after a minimum usage.
  - ECRWD may evaluate rate structure to determine if current rates/reserves address potential emergency needs.
  - ECRWD may enforce a watering ban on non-essential watering of lawns and landscaping, and washing of vehicles or driveways.

- **Drought Emergency**
  - ECRWD will strive for a minimum of 30% reduction in system water use.
  - ECRWD will provide weekly drought information updates to the public.
  - ECRWD may enforce consequences for noncompliance of water saving restrictions.
  - ECRWD will strive to maintain essential water uses.

**Monitoring Aquifer Conditions and Sensitivity Analysis:**
ECRWD will also continue to utilize the data provided by the North Dakota State Water Commission (NDSWC) monitoring wells to monitor water levels in the Elk Valley, Page, Inkster, Galesburg and Hillsboro Aquifers. Additionally, drawdown data recorded from local Rural Water owned wellfields will be monitored on a regular basis. The outputs of this data include hydrographs that trend water levels on an annual basis.

ECRWD has worked closely with the NDSWC to understand how the state hydrologists use data from the monitoring wells to predict or forecast droughts. Findings are summarized as follows:

- **NDSWC** does not have a framework for drought probability calculations, however, there are known dry years in the historical water level monitoring data and the impacts of those years are quantifiable.

- Probability is based on observed records, thus far we know that two significant multi-year droughts have occurred in our region in the last 90 years.

- The NDSWC very closely monitors the water level trends keeping a keen eye on any trend they may suspect resembles historical trends leading up to or during previous known droughts.

- The NDSWC makes appropriations out of the aquifer based on modeling of stresses that pumping rates have on the aquifer.
Realizing that there are too many variables for the NDSWC to consider to accurately forecast probability of a drought, ECRWD completed a simplified sensitivity analysis for the Elk Valley Aquifer. If a drought were to occur and cause water levels to drop in the aquifer, the NDSWC would notify permit holders that they needed to cease pumping. These notifications would be made in order of priority date.

Based on all permits in the Elk Valley Aquifer, and in order of priority date, the following assumptions about aquifer sensitivity as it directly applies to ECRWD and the Elk Valley Aquifer are summarized in the following table:

<table>
<thead>
<tr>
<th>Aquifer Sensitivity, as Percent (%) Aquifer Compromised</th>
<th>Percent (%) of ECRWD Raw Water Supply Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>0%</td>
</tr>
<tr>
<td>72.2%</td>
<td>18%</td>
</tr>
<tr>
<td>81.9%</td>
<td>41%</td>
</tr>
<tr>
<td>87.7%</td>
<td>50%</td>
</tr>
<tr>
<td>89.4%</td>
<td>70%</td>
</tr>
<tr>
<td>91.9%</td>
<td>79%</td>
</tr>
<tr>
<td>96.8%</td>
<td>93%</td>
</tr>
<tr>
<td>97.3%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The primary takeaway from the table above is that; because of the NDSWC policies in place for permit priority date, the Elk Valley Aquifer would need to experience a drought that compromised at least 72.2% of the volume of water in the aquifer before ECRWD would be impacted.

ECRWD and its consecutive users rely very heavily on the Elk Valley Aquifer because it is nearest to the ECRWD WTP. ECRWD has completed a study of projected demands for itself and consecutive users to confirm that regionalization efforts are wise investments for the people of the region. It is most cost effective for the ECRWD WTP to be the primary WTP in the area and therefore the list of infrastructure improvements in the following section has been developed to provide a roadmap for increasing the reliability and redundancy of supply to the region. ECRWD is confident that these efforts will mitigate impacts of supply shortfalls if implemented in a timely manner.

**Prioritization of Efforts:**

1. Finished water transmission pipeline between GFTWD and TRWD via Mayville: Primary use is to convey finished water to the west half of TRWD via GFTWD. Secondary use is to reverse flow and purchase finished water, if backup supply is needed, from the City of Mayville WTP for GFTWD and TRWD. *Completed in 2018.*

2. Finished water transmission pipeline between GFTWD and AWUD Reservoir 5 (Phase 1): Primary use is to convey finished water to the southern half of AWUD via GFTWD. Phase 2 of this transmission pipeline will be facilitated by AWUD and will complete the installation of the transmission pipeline between AWUD’s Reservoir 5 and WTP. Once this pipeline is complete the primary use will be to convey finished water to the entire AWUD system. *Phase 1 Completed in 2018, Phase 2 under construction in 2020 and online by 2021.*

3. Finished water transmission pipeline between GFTWD and Larimore. Primary use is to convey finished water to Larimore via GFTWD. *Completed in 2019.*

4. Finished water transmission pipeline between ECRWD Reservoir 11 and City of Hillsboro. Primary use is to convey finished water from GFTWD to the east half of TRWD via Hillsboro. Secondary use is to convey finished water if backup supply is needed from the City of Hillsboro.
WTP to the eastern half of GFTWD and TRWD. **Expected to be under construction in late 2020 and online in 2021.**

5. Construction of the necessary infrastructure to obtain access to the City of Larimore’s existing wells and permit allocation. This will benefit ECRWD immediately with an additional 500 acre-feet (22.60% increase) in supply would be achieved. The priority date of the permit in the City of Larimore’s name is most senior in the Elk Valley aquifer. The aquifer would need to become over 98% compromised before this supply would be impacted. **Currently seeking funding for late 2021 construction.**

6. Construction of the necessary infrastructure to obtain access to the City of Northwood’s existing wells and permit allocation. This will benefit ECRWD immediately with an additional 300 acre-feet increase in supply would be achieved. The priority date of the permit in the City of Larimore’s name is most senior in the Elk Valley aquifer. The aquifer would need to become over 82% compromised before this supply would be impacted. The chart below illustrates the ability for ECRWD to supply its current consecutive users upon completion of efforts 1 through 6 listed above. ECRWD will continue to plan for funding of efforts 7 and 8 below prior to the year 2036 to assure an on-time implementation so that the impacts of future predicted shortfalls in supply are mitigated. **Will begin seeking funding in late 2020 or early 2021.**

7. Raw water from TRWD Wellfield to ECRWD WTP.

8. Raw water from AWUD Wellfield to ECRWD WTP.

**Responsibility and Stakeholders:**
ECRWD’s Manager is the principal in charge of communicating plans and actions deemed necessary for sustainability of the system to the 7-Member Board of Directors. The manager is also responsible for communicating plans/actions/changes with any consecutive user of the system. This may be done by mail, public information meeting, regularly scheduled board meeting, or annual membership meeting.
Ongoing Planning Efforts and Needs Assessments:
This plan was developed in response to the official merger between Grand Forks Traill Water District (GFTWD) and Traill Rural Water District (TRWD), as well as the significant increase in demands ECRWD has experienced unexpectedly over the last several years. These unexpected demands include; the City of Larimore needing assistance to combat their failing WTP, and Agassiz Water Users District (AWUD) needing to improve water quality and redundancy in supply while combatting a quickly aging system. Additionally, ECRWD has experienced an increase in agricultural demands higher than anticipated over the past several years. The unexpected demands pushed ECRWD a few years forward in this planning effort with the realization that quantity and redundancy of raw water supply was becoming increasingly critical to address.

ECRWD will remain committed to further developing a long-range plan for the system as more information is gathered, and more historical data is captured that can help fine tune future water need and financial projections.

This plan has been updated and adopted by ECRWD on this 5th day of June 2020.

Neil Breidenbach, ECRWD Manager
APPENDIX B – Official Resolution
OFFICIAL RESOLUTION OF THE EAST CENTRAL REGIONAL WATER DISTRICT REGARDING PARTICIPATION IN FUNDING FOR A BUREAU OF RECLAMATION DROUGHT RESILIENCY GRANT PROJECT.

A. WHEREAS, the United States Department of the Interior, Bureau of Reclamation, under its DROUGHT RESILIENCY Grant Program, has made available to qualifying applicants grant funding on a matching fund or challenge grant basis funds for water conservation and management projects; and

B. WHEREAS, East Central Regional Water District has identified a project that exemplifies the objectives of the WaterSMART grant program in its Drought Resiliency Program;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of East Central Regional Water District:

1. The Board of Directors verifies that (Kory Sondreal) has legal authority to enter into an agreement with Reclamation.
2. The Board of Directors has reviewed and supports the application submitted.
3. The Board of Directors is capable of providing the amount of funding and/or in-kind contributions specified in the funding plan.
4. That if selected for a Drought Resiliency Grant under the Fiscal Year 2021, the board will negotiate and execute a Cooperative Agreement with Reclamation on/or prior to the established deadline, to fund at least 50% of the project costs and provide documentation showing the sources of non-Reclamation funding that totals 50% of project costs for the Project.

ADOPTED AND APPROVED this 23 day of July 2020.

Kory Sondreal, President

Attest:

Neil Breidenbach, Manager
ADDENDUM 2020:
EAST CENTRAL REGIONAL WATER DISTRICT 2019 SYSTEM EXPANSION AND DISTRICT INTERCONNECT CLASS II-III CULTURAL RESOURCES INVENTORY GRAND FORKS AND TRAILL COUNTIES, NORTH DAKOTA

by

Michael A. Jackson
Agassiz Archeology
PO Box 5944
Grand Forks ND 58206-5944

(Project AA20001)

prepared for

Advanced Engineering and Environmental Services, Inc.
4050 Garden View Drive, Suite 200
Grand Forks ND 58201

on behalf of

East Central Regional Water District
1401 7th Avenue NE
Thompson ND 58278

endorsement

Michael A. Jackson, M.A., Principal Investigator

July 2020
PROJECT NAME: Addendum 2020: East Central Regional Water District 2019 System Expansion and District Interconnect Class II-III Cultural Resources Inventory, Grand Forks and Traill Counties, North Dakota.

LEGAL LOCATION: see Table 1.

SURVEY ACREAGE: 184 acres (15.2-mi by 100-ft).

PROJECT SPONSOR: East Central Regional Water District, Thompson, ND.

LEAD AGENCY: North Dakota State Historic Preservation Office (ND-SHPO).

STATE STUDY UNIT: Northern Red River.

PROJECT NUMBER: AA20001.

ABSTRACT

In July 2020, Agassiz Archeology researchers completed an additional Class III cultural resources inventory for one portion of the then-proposed 2019 System Expansion and District Interconnects project, East Central Regional Water District, Grand Forks and Traill counties, North Dakota. In 2020, the Larimore Route was lengthened and most of its location altered – of the 9.4-linear miles planned for construction, 7.6-mi had not been previously surveyed. A secondary, alternate route was included in the project, and it closely paralleled the planned route; the alternate route was included to make potential site avoidance measures easily implemented. A total of 15.2-linear miles of pipeline routes, within a 100-ft wide construction corridor (184 acres), were treated to 100% Class III cultural resources inventory survey coverage. No cultural resource sites were identified in the 2020 reroute survey corridors; likewise, none exist in previously surveyed portions of the proposed Larimore 2020 reroute. Given these negative findings, project clearance is recommended – it is recommended that pipeline construction be allowed to proceed under a finding of no historic properties affected.
PROJECT BACKGROUND

In the fall of 2019, Agassiz Archeology researchers carried out a Class II-III cultural resources inventory for the proposed System Expansion and District Interconnect construction project, East Central Regional Water District (ECRWD), Grand Forks and Traill counties, North Dakota (Jackson 2020). Advanced Engineering and Environmental Services, Inc. (AE2S), Grand Forks, ND, was the engineering firm that oversaw planning and construction of the project. As planned, the project consisted of three rural transmission water pipeline segments that totaled 32-linear miles, including: (1) a northwestern route near Larimore that totaled 5.7-linear miles, (2) a central route near Northwood that totaled 11.2-linear miles, and (3) a southeastern route near Buxton that totaled 15.1-linear miles. Five cultural resource sites were recorded or revisited, and impact avoidance measures were provided for each. Project clearance was recommended under a finding of no historic properties affected, so long as known sites were avoided (Jackson 2020:10).

Engineering changes to the project occurred over the winter of 2019-2020. The Northwood and Buxton routes remained unchanged, but the Larimore route location was altered and lengthened (Figure 1). The revised route connected the city of Larimore water location to a rural water treatment plant. The revised route totaled 9.4-linear miles of proposed construction corridor, of which 1.8-linear miles had been surveyed the prior year. The remaining 7.6-linear miles of planned pipeline route have not surveyed for cultural resource sites. In late June 2020, AE2S requested that Agassiz Archeology conduct a supplemental Class III cultural resources inventory (intensive, pedestrian survey) for those portions of the revised Larimore route not previously surveyed for cultural resources. In addition, AE2S requested that an alternate, potential construction corridor be surveyed to provide a location to divert the pipeline to, should site avoidance become necessary at a given locale (Figures 2-4).

The alternate construction corridor was located closely parallel to the planned route, and on the opposite side of the nearest road, section line, or half-section line. This effectively doubled the project area, to 15.2-linear miles of planned and alternate pipeline routes, each within a 100-ft wide construction corridor. The 15.2-mi by 100-ft project area of potential effect (APE), or right-of-way (ROW), totals 184 acres. The Larimore 2020 reroute crosses portions of 20 legal sections (Table 1), though new survey work occurred in only 16 of the 20 sections. Fieldwork methods followed from established survey guidelines in-use for the State of North Dakota (SHSND 2013).

ENVIRONMENT

The project area is located within the Red River Valley Region of the Central Lowlands Physiographic Province (Bluemle 1991:4), and within the Northern Red River Study Unit (Picha et al. 2016), of the North Dakota Comprehensive Plan for Historic Preservation: Archeological Component (SHSND 2016). For a further description of the geology, geomorphology, natural and cultural resource potential, and native floral and faunal species of the region, consult the Northern Red River Study Unit section of the North Dakota Comprehensive Plan for Historic Preservation: Archeological Component (Picha et al. 2016; SHSND 2016).
CULTURE HISTORY

Human occupation of the Northern Plains is documented as early as 12,000 years ago. The Northern Plains cultural-chronology consists of five basic periods: Paleoindian (9500-5500 B.C.), Plains Archaic (5500-500 B.C.), Plains Woodland (500 B.C.-A.D. 1000), Plains Village (A.D. 1000-1780), and (5) Historic (A.D. 1780-present). In glacial beach settings, like that in the Larimore project reroute, one could reasonably expect to find artifacts or features dating to all of the five major cultural periods at or near the modern ground surface.

RESEARCH GOALS

The research goals of the Class III cultural resources inventory emulate guidelines set by the State Historical Society of North Dakota. The purpose of such inventories is defined as being:

A comprehensive, systematic effort ... made to identify all resources within the area of concern that might qualify for the National Register of Historic Places and/or the North Dakota State Historic Sites Registry, and to record information sufficient to permit their evaluation or to indicate what further work is necessary to accomplish their evaluation. (SHSND 2013:15)

For identification and recording purposes, a cultural resource site is defined as a location of past human activities that took place prior to about 1950 and which left physical traces of that activity in the form of (1) an intact cultural feature, (2) six or more artifacts found within about 60-m of each other, and/or (3) an intact subsurface cultural deposit regardless of the number of artifacts. Locations with fewer than six prehistoric artifacts are identified as isolated finds. Cultural features would include stone circles, pits or depressions, standing or collapsed structures or buildings, bridges, hearths, dumps, foundations, and prehistoric rock cairns. Items that are not formally recorded or evaluated as cultural resource sites or features include field clearing rock piles, fence lines and fencing materials, roadways, and modern buildings and structures.

CLASS I INVENTORY – METHODS AND RESULTS

Prior to the start of the fieldwork, a background file and records search was conducted for the revised Larimore route. The revised Larimore route, and alternate route, is located in portions of 20 legal sections (Table 1). This list of sections was provided to Ms. Amy Sakariassen, Bismarck, ND, who carried out the Class I cultural resource inventory, or, background file search. The file search made use of the site files, site lead files, manuscript collection, computerized site and manuscripts databases, and the GIS database at the North Dakota State Historic Preservation Office (ND-SHPO), State Historical Society of North Dakota (SHSND), Bismarck. In addition, the National Register of Historic Places (NRHP) listings were checked.

Four previous manuscripts, or reports, are on file at the ND-SHPO for past cultural resources projects conducted within one mile of the current project APE (Table 2). One project was a historic overview study (Gnabasik et al. 2014), and the other three were relatively small, narrow, linear survey projects (Jackson 2020; Kinney 1994; Larson 1998). They included a road survey (Larson 1998), a 1990s
rural water project survey (Kinney 1994), and last year's initial survey work for the ECRWD project (Jackson 2020).

No previously recorded cultural resources (sites, architectural structures, site leads, or isolated finds) are located within one mile of planned pipeline routes, according to records on file at the ND-SHPO.

CLASS III INVENTORY – METHODS AND FIELDWORK

The Class III cultural resources inventory methods employed for the current project are based on ND-SHPO guidelines published by the State Historic Society of North Dakota, Bismarck (SHSND 2013). Individual crew members were deployed to walk the 100-ft wide project APE and identify and mark the presence of cultural resource sites and artifacts (other than recent trash). The crew then returned to any identified site locations to complete their recording, including the identification of features that might be present, collection of sufficient data to complete NDCRS site forms and site form updates, and to provide a preliminary site evaluation as to condition and potential significance. When located, artifacts and/or features were identified, the site was photographed, and a simple map was made of the site area. No artifacts were collected during the course of survey or site recording work.

Survey conditions and methods were excellent for the locating and recording of all near-surface and surface-visible cultural resource sites in the project area. The weather was clear and hot, usually with a sufficient breeze to help minimize the number of flying pests. Ground surface visibility across the project area was good-to-excellent (Figures 5 and 6). All project routes were located in plowed fields where there was little or no crop cover (5-25% ground surface visibility). In no instance was an area encountered with a combination of high site potential and poor ground surface visibility that would have warranted shovel tests.

CLASS III INVENTORY – RESULTS

No cultural resource sites were newly identified during the 2020 survey work. No previously recorded sites are known to exist in the area, as well.

SUMMARY AND RECOMMENDATIONS
(Subject to Federal/State Agency Approval)

A Class III cultural resources inventory (intensive, pedestrian survey) was conducted for proposed revisions to the planned East Central Regional Water District, System Expansion and District Interconnect project. Revised project pipeline routes and alternate routes treated to Class III survey work were located in Grand Forks County, North Dakota. The survey work was completed in July 2020 by personnel of Agassiz Archeology, Grand Forks, ND. The survey work involved 15.2-linear miles of proposed pipeline and alternate pipeline routes, each within a 100-ft wide corridor (184 acres). The project area of potential effect was defined as the 100-ft wide (30-m) surveyed right-of-way. No cultural resource sites were identified in 2020, and likewise, none were identified in previously surveyed portions of the Larimore reroute.
Given the negative survey results, it is concluded that construction of the proposed Larimore 2020 reroute pipeline will have no adverse effect on any significant or potentially significant and unevaluated cultural resource sites. It is recommended that construction of the revised Larimore reroute of the ECRWD project be allowed to proceed under a finding of “no historic properties affected,” and without the need for further archeological investigations. The appropriate state and/or federal review authorities must concur with the recommendations made here before any action may be taken in their implementation. If any undiscovered and unknown archeological remains are encountered during electric line installation, then (1) all work must stop in the immediate area of the find and (2) the ND-SHPO must be informed immediately.
REFERENCES CITED

Bluemle, J. P.

Gnabasik, V., B. Williams, J. Westman, and J. Sobiech

Jackson, M. A.
2020 *East Central Regional Water District 2019 System Expansion and District Interconnect: Class II-III Cultural Resources Inventory, Grand Forks and Traill Counties, North Dakota*. Agassiz Archeology, Grand Forks, ND [MS# 18,731].

Kinney, W. J.

Larson, T. K.
1998 *Results of a Class II and Class III Cultural Resource Inventory for NDDOT Project Area SS-6-018(028)152, Grand Forks County, North Dakota*. LTA, Inc., Laramie, WY. [MS# 7283]

Picha, P. R., M. L. Gregg, A. C. Bleier, and T. A. Reed

SHSND (State Historical Society of North Dakota)

Table 1. PLSS Sections Crossed by Proposed and Alternate Pipeline Corridors of the Proposed Larimore 2020 Reroute, ECRWD System Expansion and District Interconnect Project, Grand Forks County, ND.

<table>
<thead>
<tr>
<th>County</th>
<th>TWP</th>
<th>RNG</th>
<th>Sections</th>
<th>No. of Sections</th>
<th>SHSND Study Unit</th>
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<td>54</td>
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<td>54</td>
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<td>NR</td>
</tr>
<tr>
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<td>55</td>
<td>12&lt;sup&gt;b&lt;/sup&gt;, 13&lt;sup&gt;b&lt;/sup&gt;, 24, 25, 36</td>
<td>5</td>
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<tr>
<td>Total</td>
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<td></td>
<td></td>
<td>20</td>
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<sup>a</sup> Northern Red River Study Unit.  
<sup>b</sup> The project corridor in this section was not surveyed in 2020, because it was examined in 2019.

Table 2. Updated Class I File Search Results for the Proposed Larimore 2020 Reroute, ECRWD System Expansion and District Interconnect Project, Grand Forks County, ND.

<table>
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<tr>
<th>COUNTY</th>
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<th>SCT</th>
<th>SITES</th>
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Figure 1. Overview map of the proposed Larimore 2020 reroute, ECRWD system expansion and interconnects project, Grand Forks County, ND.
Figure 2. Quadrangle map coverage of the proposed Larimore 2020 reroute, ECRWD system expansion and interconnects project, Grand Forks County, ND.
Figure 3. Quadrangle map coverage of the proposed Larimore 2020 reroute, ECRWD system expansion and interconnects project, Grand Forks County, ND.
Figure 4. Quadrangle map coverage of the proposed Larimore 2020 reroute, ECRWD system expansion and interconnects project, Grand Forks County, ND.
Figure 5. Photographs of field conditions along the proposed Larimore 2020 reroute, ECRWD system expansion and interconnects project, Grand Forks County, ND.  

(a): Plowed fields north of the water treatment plant, T150N/R54W/S2-3 (view south; AA20001-008).  
(b): Plowed fields bordering the Hazen Brook channel, T150N/R54W/S3 & T151N/R54W/S34 (view west; AA20001-015).
Figure 6. Photographs of field conditions along the proposed Larimore 2020 reroute, ECRWD system expansion and interconnects project, Grand Forks County, ND. a: Plowed field bordering a copse of trees, T151N/R54W/S33 (view north; AA20001-018). b: Plowed fields bordering ND Highway 18, T151N/R54W/S30 & T151N/R55W/S25 (view north; AA20001-024).