

Red River Authority of Texas



Advanced Metering Infrastructure Program

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SECTION 1. EXECUTIVE SUMMARY

Date	
Applicant	Red River Authority of Texas
AUTHORITY, County, State	Wichita Falls, Wichita, Texas
Project Name	AMI Meter Replacement Program
Project Length	2 years
Estimated Completion Date	October 31, 2024

The RED RIVER AUTHORITY OF TEXAS (the AUTHORITY), is applying for funding by the United States Bureau of Reclamation's (USBR) WaterSMART: Water and Energy Efficiency Grants for FY2023 Funding Opportunity Announcement No. R23AS00008. The AUTHORITY is applying for \$450,000 in Federal funding assistance to implement an Advanced Metering Infrastructure (AMI) Program, which includes the installation of 2,650 new water meters with additional ancillary radio and computer reading equipment for residential and commercial customers. Funds will be used to purchase new smart meter hardware and software, and to purchase and install AMI meters and appurtenances. The purpose of the AMI Program is to increase water conservation and water use efficiency by providing real-time water consumption data to the AUTHORITY and its customers.

Water Conservation - The Project shall increase efficiency and reduce water loss and accountability for a sustainable potable water service through improved water resource management and overall system operation. This will help conserve water, and increase the financial stability and service reliability of the utility. Water conservation will be improved by increasing customer understanding of their water use compared to neighbors, and public education through water audits. Customer leaks can be identified and stopped in a matter of hours, compared to up to sixty days with the existing manual read meters. This significantly reduces water waste and property damage. A percentage of the AUTHORITY's customers are part-time residents, so leaks running for weeks while the customer is away is common place with conventional meters. Reduced water use through conservation produces a linear reduction in energy use associated with source production, conveyance, and treatment requirements.

The Project is not located on a Federal facility.

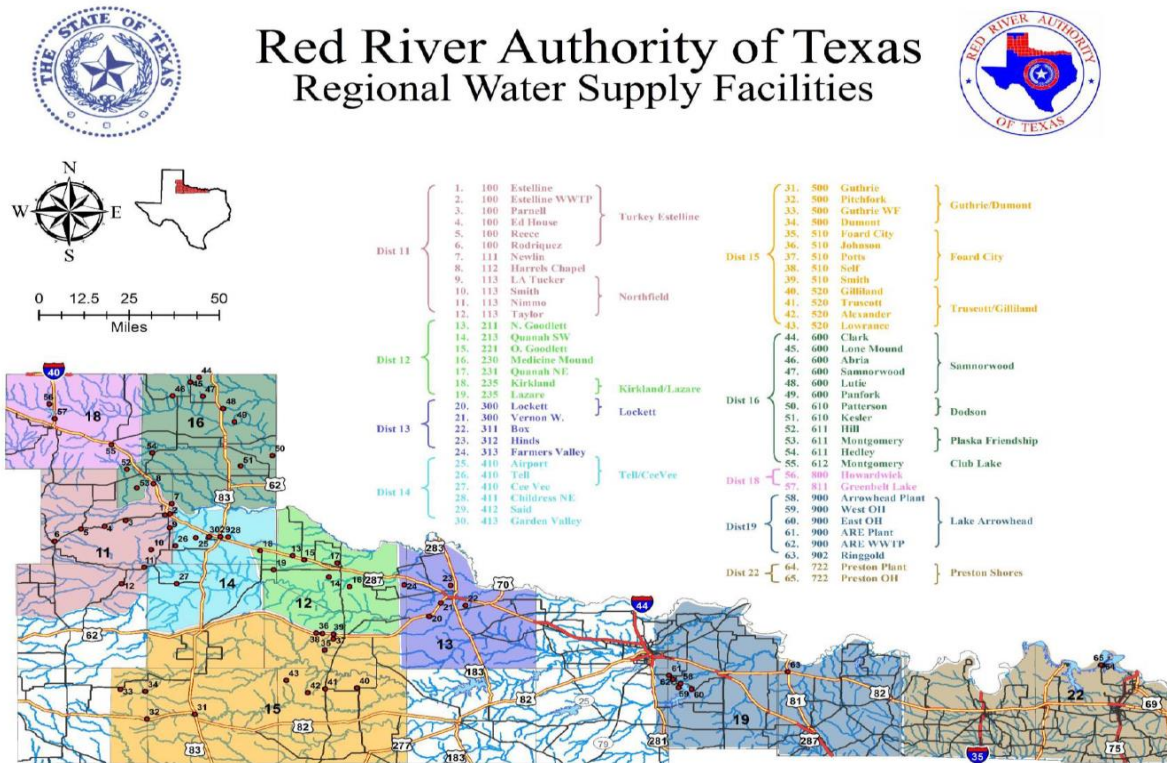


SECTION 2. BACKGROUND DATA

2.1 Location

The AUTHORITY has multiple water systems with an overall operating water service area located along northern Texas, as depicted in Figure 1. These areas are located in 15 counties of North Texas bounded Donley County on the West and Grayson County on East, with the Red River basin. In total, the AUTHORITY’s operating water service areas encompass approximately 13,000 square miles.

Figure 1 Water Service Area



2.2 Overview of Water Supply

The AUTHORITY produces potable water from groundwater wells and surface water, and purchases treated surface and groundwater. The AUTHORITY’s projected water supplies are summarized in Table No. 1. These quantities meet all state water conservation requirements. As shown, the average annual demand is 1,909 acre-feet per year (afy), and is within the safe yield of all sources.

Table No. 1 Current and Projected Demand

Supply Source	Annual Pumping (afy)					
	2022	2027	2032	2037	2042	2047
Groundwater/ Total	698	701	704	706	709	712
Surface/Total	1211	1216	1221	1226	1230	1235
Total	1909	1917	1924	1932	1940	1947

Note:

The calculations used for the demands are based on a 0.0008% growth in demand each year, beginning in 2023.

Table No. 2 Summary of the Current and Future Water Use by Customer Class

Customer Class	2022		2027		2032	
	No. of accounts	Demand (afy)	No of Accounts	Demand (afy)	No. of accounts	Demand (afy)
Single-Family	3,965	807	4,009	810	4,053	813
Multi-family	-	-	-	-	-	-
Commercial	99	219	100	220	101	221
Industrial	-	-	-	-	-	-
Government	-	-	-	-	-	-
System Losses	-	808	-	811	-	814
Total	4,065	1,834	4,109	1,841	4,154	1,849



Table No. 2 Summary of the Current and Future Water Use by Customer Class (cont.)

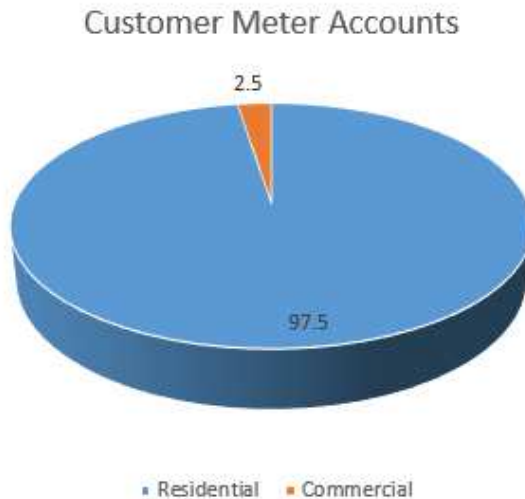
Customer Class	2037		2042	
	No. of accounts	Demand (afy)	No. of accounts	Demand (afy)
Single-Family	4,097	817	4,142	820
Multi-family	-	-	-	-
Commercial	103	222	103	223
Industrial	-	-	-	-
Government	-	-	-	-
System Losses	-	818	-	821
Total	4,200	1,856	4,245	1,864

Note:
The calculations used for the demands are based on a 0.0008% % growth each year, beginning in 2023. Water Loss is projected with no AMI or other measures of reduction.

2.3 Current Water Uses

As of 2022, the AUTHORITY maintains 4,065 water meters, of which 3,965 (97.5%) are residential and 99 (2.5%) are commercial. (Figure 2).

Figure 2 Customer Account Breakdown



2.4 Water Delivery System Description

The AUTHORITY distributes its potable water supply through a distribution system consisting of 33 water systems with 33 separate pressure zones, 1,190 miles of pipeline, 8 well systems, 1 surface water plant. The AUTHORITY also purchases ground water for 5 systems and surface water for 27 systems.

SECTION 3. TECHNICAL PROJECT DESCRIPTION

The AUTHORITY has 4,064 meters within its service area. Some of the meters are over 40 years old. The typical warranty on a meter is 10 years on moving parts and 20 years on the meter body.

The AUTHORITY has completed a review of the meters, and the staff determined that 1,379 meters are 20+ years old, 1,749 meters are 15-20 years old, and 936 meters are 5 or less years old. These figures do not include approximately 600 auto-read meters to be installed this fiscal year. Since approximately 10% of the AUTHORITY's customers are part-time residents, it is not unusual for meters to have no usage for several months.

Based upon this water meter data, the AUTHORITY needs an AMI project to replace approximately 65 percent of the metering system, or 2,650 new meters and add additional radio read technology. The AUTHORITY conducted research on five different types of meters from three different manufacturers and three different radio read systems. Upon completion of the process, the AUTHORITY will continue to use the Master Meter Sonata Meter and Master Meter Mobile AMR system (see details in next section), based on the competitive bid process.

3.1 The Proposed Project

Upon execution of a contract, the AUTHORITY will purchase and install 2,650 meters over two years along with additional equipment. The project will comply with standards established by the American Water Works Association (AWWA) for drinking water systems, and the meters will be lead free.

Selected technology:

In considering meter system options, the following items were reviewed to identify the most appropriate technology:

- Accuracy in metering water consumption;
- Ability to perform radio and/or drive-by readings;
- Ability to store historical data for consumption patterns or system deficiencies (unaccounted for water);
- Reliability of the meter in a freeze-thaw environment;
- Compatibility with the existing system;
- Cost of initial investment, as well as ongoing operations and maintenance costs;
- Training requirements.



Selected Equipment:

Meter:

Master Meter Sonata composite meter. Additional information is provided in Section 4.1.

Radio:

Meter consumption information is picked up by Master Meter Mobile AMR radio receiver. This information will be downloaded into the AUTHORITY's INCODE system, and will be used to answer customer inquiries, bill the accounts, and disseminate leak alarms. Additional information is provided in Section 4.1.

3.2 AMI Benefits

The purpose of this AMI system is to better track water system demands in real time to measure effects of conservation measures. By tracking real time data of water system demands, the AUTHORITY will be able to educate customers regarding water use and also identify leaks and other areas where additional conservation may be possible.

The AUTHORITY hopes to use the AMI system to improve the following areas of conservation:

Leak Alerts -One very important benefit of improved data collection is the ability to identify customer leaks. AMI systems can detect two types of leaks. First, AMI software can be programmed to recognize large sustained increases in flow departing from normal use patterns. This is indicative of catastrophic pipeline breaks. When this type of break is detected, home or business owners can be notified in case they are away at work or out of town, allowing the customer and the AUTHORITY's staff to respond to the break as quickly as possible. This is particularly important as some homeowners are not full time residents, potentially causing catastrophic property damage and significant water loss. A second type of leak that can be identified by the AMI system is recognizing when a small amount of flow is consistently being detected at the meter. This is indicative of a small leak somewhere in the home or business, or between the meter and the building or home. In this case, the AUTHORITY can contact the resident to identify the issue and encourage the customer to investigate. In both cases, AMI can save water for the AUTHORITY and money for its customers. The EPA estimates the average household's leaks can account for more than 10,000 gallons of water wasted every year. This represents a significant area of potential conservation. In addition, once a customer reports that a leak has been repaired, the AMI interface allows staff to confirm that fact.

Time of Day Audits -In the next Water Conservation and Drought Contingency Plan, the Authority is considering implementing certain restrictions on outdoor irrigation for all water users. Evaporation has been measured in several locations in the water service area. Evaporation rates in this region can be as high as 7.9 inches of water per month. This can trigger irrigation of lawns. The AMI system has the ability to provide alerts to the AUTHORITY when water uses indicate possible irrigation occurring during prohibited time frames. Violations are generally addressed with visits and written reminders to customers.

Peak Use Data -With the AMI system, it will be possible to educate customers regarding peak usage. For example, the AUTHORITY will be able to alert customers to key periods of high demand that may



be indicative of water waste. By identifying peak demand periods, customers can be made aware of times of day or times of year when water is potentially being wasted.

Water Audits -In addition to time of day and leak alerts, it is also possible to identify the largest users of water on a regular basis, as well as, peak instantaneous demand basis. The new AMI system will also be able to identify the highest users by peak day and peak hour. This may help identify users that have less efficient fixtures or sprinkler systems. For those users with excessive water use, the AUTHORITY could provide information and resources to help in their efforts to save water.

Drought and Water Emergency Measures -In addition to its efforts to achieve long-term water use reductions through conservation, the AUTHORITY also has a plan for reducing water consumption in times of drought or other water emergency (such as a line break). The Drought Contingency Plan includes the restriction of water use by large users, stricter enforcement of existing AUTHORITY conservation practices, voluntary reduction of water use, with mandatory reductions of water through enforcement as a last resort. The AMI system will be capable of quickly identifying large water users in the case of a water emergency and enforcing conservation restrictions if necessary.

Texas Water Development Board Compliance – Texas State law requires each water supplier to submit a completed and validated water loss audit report. The addition of AMI would greatly assist the AUTHORITY in completing the annual audit, ensuring the accuracy of reads.

Usage Alerts – Approximately 10% of the AUTHORITY’s customers are part-time residents. The AMI system can be setup to notify the customer of usage during periods when they are out of town. This feature will improve the security/safety of the home, reduce property damage/loss, and reduce unauthorized water use.

SECTION 4. EVALUATION CRITERIA

4.1 Evaluation Criterion A: Quantifiable Water Savings

The AUTHORITY’s long-term water conservation goal is to reduce per capita water use by 9% in accordance with its Water Conservation Plan of 2019. This project is a critical component of the AUTHORITY’s overall conservation plan. In order to reduce the AUTHORITY’s customer water use and meet its conservation goal, the AUTHORITY needs to implement an AMI Meter Replacement program in support of the AUTHORITY’s continuing water conservation efforts. The AUTHORITY evaluated four different meter manufacturers (five different meter models) and three different radio manufacturers. The Master Meter Sonata meter has the best overall value and cost, so it was selected. The Master Meter Mobile AMR can be mounted in any vehicle to receive real time meter information for the AUTHORITY’s computers.

The AUTHORITY’s water production for Calendar Year 2021 (CY21) is 1,909 AF/year. The water loss percentage has been 42.3%. The new AMI meters will provide the AUTHORITY real time, hourly usage information, which will assist us in identifying large and small customer leaks. The AUTHORITY will



also use this information to identify large use customers and customize a conservation plan for those customers. The hourly usage data will also be used to identify customers who are irrigating outside of the approved irrigation times and days. The AUTHORITY will educate these customers to irrigate during early morning or evening hours, which is more efficient and will ultimately allow them to reduce their irrigation times.

Lost water is either used by the customer while not measured due to an inaccurate or inoperable water meter, or has percolated into the ground after leaking from the AUTHORITY’s water distribution system or the customer’s system. The AMI meter replacement initiative will allow the AUTHORITY to locate customer leaks within hours. The new accurate meters will enable the AUTHORITY to easily identify areas where supply production quantities significantly exceed usage quantities, which will allow refining the area in which to search for a water main leak. The above measures will conserve water and reduce the amount of water the AUTHORITY pumps.

4.1.1 Sub-criterion No. A.1: Reducing Water Loss

The AUTHORITY’s AMI meter replacement initiative will reduce water loss by four different quantifiable ways, and **will result in 105 acre-feet per year in water savings**. 1) The AUTHORITY was concerned with the accuracy of its meters, and it is estimated under-registering of water usage is 3% of total production. 2) The AUTHORITY’s meters operate in a freeze-thaw environment that can cause the meter to become inoperable and register zero flow. The estimated unaccounted for water for non-registering meters is 1%. 3) Approximately 10% of the AUTHORITY’s customers are part-time residents. Since the AUTHORITY has a monthly billing policy, some leaks can run for thirty days or more before being discovered. The estimated unaccounted for water due to customer leaks is 2.5%. 4) Accurate metering will result in higher billing for some accounts, which will lead to a conservation response from some customers.

1. **Water Meter Accuracy:** Some of the AUTHORITY’s meters are over 20 years old and nearly 3,100 of the AUTHORITY’s conventional meters have exceeded their useful life. Concerned with the accuracy of these aging meters, the AUTHORITY conducted a review of AMI with several vendors. Based on industry testing, the AUTHORITY’s meters would be averaging 3% low. Using this accuracy data and calendar year 2021 water production quantity of 1,909 acre feet, the un-accounted water for calendar year 2021 was 57 acre feet (1,909 AF * 3%). This project would save approximately 37 acre feet per year for 2,650 meters, based on overall system (65% of system replaced, loss due to inaccuracy).

Table No. 3 Estimated Water Loss from Meter Inaccuracy

Acre Feet Produced	1,909
Estimated Loss Overall	3%
Acre Feet Losses CY 2021	37

2. **Non-registering Water Meters:** the AUTHORITY estimated that 1% of its meters are



inoperable. Extrapolating this percentage over the AUTHORITY’s 2,650 meters, there are an estimated 26 inoperable meters in our system. Assuming the estimated 26 meters were not registering flow during calendar year 2021, the non-revenue water related to stuck meters extrapolates to 19 acre-feet per year for 2,650 meters.

Table No. 4 Estimated Water Loss from Non-registering Water Meters

Estimated # Non-registering Meters	26
Annual Water Loss (AF)	19
% of Annual Production	1%

- Undetected Customer Leaks:** Approximately 10% of the AUTHORITY’s customers are part-time residents. During the winter months, many of these customers fail to properly winterize their water systems prior to leaving the house vacant for extended periods of time. A leak can go undetected for months. The AUTHORITY does not provide leak adjustments to customers who have unusually high usage due to a leak and provide proof that the leak has been repaired. The new AMI meter system will allow the AUTHORITY to identify leaks within hours, rather than days or months. The AUTHORITY calculates that 47.7 AF/year [1909 AF/year average water production) * 2.5% (estimated leak loss)] of water is lost to leaks. Approximately 47.7 acre feet per year can be conserved when AMI meters are fully deployed. The assumptions made with this calculation are that the amount of water loss before a reported leak is repaired is understated by the customers that have leaks.

Table No. 5 Estimated Water Loss from Customer Leaks

CY 2021 Water Production (AF)	1,909
Estimated Production lost to customer leaks	2.5%
Estimated Annual Water Loss due to Customer Leaks (AF)	47.7

- The un-accounted water caused by under-registering old meters and non-registering meters is calculated at 6% of the AUTHORITY’s annual water production. Even though reducing un-accounted, non-revenue water does not directly result in water conservation, it does have water conservation benefits. The new meters will accurately measure the customer’s usage and the additional 3% measured water usage may place these customers into a high usage category, resulting in additional conservation efforts by the customer. When a customer’s inoperable meter is replaced, they still use water, but now it is measured. If it is assumed that 10% of customers with under-registering meters have borderline high use habits, and all of the under-registering meter customers would reduce their usage once they knew how much they used, it can be estimated that about 263 customers would likely modify their usage habits. Assuming a 20% reduction in usage once these customers were aware that they were wasting water, the possible water conserved by replacing under-registering and stuck meters is as follows:



Table No. 6 Estimated Customer Conservation in Response to AMI Metering

		Table # or Calculation	
1	# customer with under-registering meters	406 * 65%	263
2	Expected high-users	10% of line 1	26
3	# Customer with non-registering meters	Table No. 4	26
4	# Customers expected to modify usage	Line 2+3	52
5	Annual Consumption (CCF)	4.7 CCF*12* line 4	2,933
6	Annual Consumption (AF)	(Line 5*748)/325,851	6.7
7	Expected Annual Conservation (AF)	Line 6 * 20%	1.3

The new AMI meters will notify the AUTHORITY, and potentially the customer, of minor, continuous water usage that could be a leak or a faucet left on. The AMI meter can detect irrigation outside of approved irrigation times, which will result in more efficient irrigation practices. The AMI meter replacement program will allow the AUTHORITY to compare real-time water usage data with real-time water production data, for a specific area of the AUTHORITY’s service area, which will allow the AUTHORITY to identify areas of the system that have main leaks. The above features of the AMI meter replacement program will conserve water but are difficult to quantify, so they were not included in the quantifiable water saving calculation.

The total quantifiable water savings expected from the AMI meter replacement program is 105 acre feet per year, or 5.5% of average annual production (105 AF/year / 1,909 AF/year). These savings will be verified once the AMI meter replacement project is completed by comparing the current un-accounted, non-revenue water quantity, to the water loss quantity after the AMI meter replacement project has been completed for one year. The AUTHORITY will also compare the average water usage before the AMI meter replacement program, to the average water usage after the AMI meter replacement project has been completed for one year.

Table No. 7 Estimated Annual Conservation

Conservation Related to AMI System	Table #	Acre Feet Conserved
Estimated Annual Water Loss Meter Inaccuracy	Table #3 (calc)	37
Estimated Annual Water Loss Non-Registering Meters	Table #4	19
Estimated Annual Water Loss Leaks	Table #5	47.7
Estimated Customer Conservation Response	Table #6	1.3
Total		105



4.1.2 Sub-criterion No. A.2: Percentage of Total Supply

As calculated above in Table No. 7, in Section 4.1.1, the Estimated Annual Conservation associated with the meter replacement program is 105 AF/year. The AUTHORITY's Annual Water Supply during CY 2021 is 1,909 AF/year. The estimated Percentage of Total Supply conserved is projected at 5.5% for 2,650 meters.

4.2 Evaluation Criterion B: Renewable Energy

4.2.1 Sub-criterion: Increasing Energy Efficiency in Water Management

The AMI project will help ensure American energy needs. The AUTHORITY anticipates there will be a reduced demand for electricity the AUTHORITY uses for pumping. By utilizing the AMI system there will be a reduction in overall driving miles for meter readers, leading to a reduction in greenhouse gas emissions.

This project is expected to save a lot of energy. The AUTHORITY uses energy to distribute water. The Authority serves water at in areas of North Texas with elevation changes as much as 300 feet in some pressure planes. Due to the variation in topography, pumping is required to move this water throughout the system. It takes 450 kWh/AF to pump water based on energy usage for the Authority. Therefore, a total of 47,250 kWh (105 AF * 450 kWh/AF) of energy could be saved annually due to efficiency and decreased water, or 623 pounds of carbon dioxide emissions, a greenhouse gas.

The AUTHORITY plans for three maintenance technicians to be reassigned to auto read meters, instead of eight district managers reading meters, which will reduce the miles driven to manually read the meters. Since stops will not be made at every meter, and in some areas, whole streets will be bypassed due to the capture range, this is estimated to reduce mileage by 30%. A district manager averages 7,000 miles per year reading meters. After the AMI Meter Replacement Program is completed, 16,800 vehicle miles per year will be reduced. This will be for the new meter reading program (7,000 vehicle miles per year * 8 district managers * 0.30). At 13 mpg average, this is a savings of 1,292 gallons of gas, or 25,313 pounds of carbon dioxide emissions, a greenhouse gas.

4.3 Evaluation Criterion C: Sustainability Benefits

4.3.1 Sub-criterion: Addressing Specific Water Sustainability

Explain and provide detail of the specific issue(s) in the area that is impacting water sustainability.

From the Water for Texas, State Water Plan for Texas, 2017 climate change is projected to affect many aspects of water resources management in the AUTHORITY's water service areas. The following were listed as vulnerabilities:

- Water Supply
- Insufficient local water supply
- Increased dependence on imported supply



- Inability to meet water demand during droughts
- Shortage in long-term operational water storage capacity

This project will reduce water demand, and therefore make water available in the event of future water supply shortages. A prolonged drought was recently experienced throughout the Red River Basin from May 2010 to July 2015, lasting 271 weeks. The AUTHORITY has a 2019 Water Conservation and Drought Contingency Plan. System conditions are monitored, and restrictions are implemented when water production approaches the perennial yield, and the impacts are apparent in pumping operations, which triggers the plan. For the Red River basin, all reservoirs in the basin reached historic lows for pool elevation during the sustained 271-week drought. The Seymour aquifer, which is an Authority groundwater source, had modelling completed in 2011, when 2010 levels did not predicted level based on drawdown assumptions. This was when the drought began. Conservation efforts had to be increased due to available water based on the new models in the Groundwater Management Area 6 Model Runs for Seymour and Blaine Aquifers, June 2011. As a result of conservation measures and community efforts, monitoring wells showed that basin management efforts have been effective and no particular sub-basins were in immediate danger of a water shortage since the end of the drought in 2015. This year, in west Texas, we are starting to see a repeat of the same 2011 conditions leading to a prolonged drought.

4.3.2 Sub-criterion: Other Project Benefits

Does this proposed project strengthen water supply sustainability to increase resilience to climate change?

The AUTHORITY’s water supply conserved from the AMI Meter Replacement Program will help offset the decreased production of the AUTHORITY’s wells during drought. There is also wide spread support (see attached letters of support in Section 11) for this project that helps water sustainability in the Red River Basin. Part of the AUTHORITY’s service area includes rural, economically disadvantaged communities.

Will the project make water available for rural or economically disadvantaged communities?

Yes, a large portion of the AUTHORITY’s water service area are rural and disadvantaged communities. The Red River Authority of Texas was created in part to provide water to under-served communities. Having the ability to actively monitor usage provides tools to help conserve water as much as possible. This will help keep the costs of water production and delivery lower. In addition, these customers will also possibly financially benefit from early leak detection and notification, also affecting affordability.

4.4 Evaluation Criterion D: Complementing On-Farm Irrigation Improvements

This is not applicable to the project.



4.5 Evaluation Criterion E: Planning and Implementation

4.5.1 Sub-criterion: Project Planning

Does the applicant have a Water Conservation Plan?

Yes, the Authority has as 2019 Water Conservation Plan and Drought Contingency Plan. Also The Texas Water Development Board (TWDB) has authority that encompasses the Red River Watershed. Specifically, The TWDB is a water resources planning agency tasked with protecting the water supply in the State of Texas. The specific adaptation strategy addressed by this proposal is to reduce demand, described in the “Water Management Strategies” section of the 2017 State Water Plan. In the plan, demand management accounts for 30% of the conservation strategy which will save approximately 2.6 million acre-feet state-wide. The AMI project will directly impact demand with conservation savings as previously reported.

By implementing the AMI technology, the AUTHORITY will be able to actively monitor customer’s use and utilize the customer interface to notify them when there are periods of peak demand. The AUTHORITY can then encourage customers to reduce their use and/or shift their patterns toward periods of off-peak demand. In addition, the thorough understanding of customer’s daily usage patterns will allow the AUTHORITY to better manage pumping activities and reservoir levels. An added benefit to monitoring use is the ability to quickly identify potential leaks and either turn the customer’s meter off, or notify them so that they can address the problem.

The Red River Authority of Texas is a participating stakeholder in Region B of the TWDB. By implementing the AMI technology, the AUTHORITY is prepared to share the results with other TWDB member agencies and contributors. It will share its experience and would be honored to be a case study for other agencies within the watershed weighing the costs and benefits to implementing AMI throughout their system.

4.5.2 Sub-criterion: Readiness to Proceed

The AUTHORITY has completed the research and product selection for the AMI system and has funding ready for the initial phase of the implementation plan. Upon entering into a financial assistance agreement with the Bureau of Reclamation, the AUTHORITY will be able to proceed with the purchase and installation of AMI meters as identified in the AMI Meter Replacement Program.

The following is a summary of the implementation plan:

- Install the Master Meter AMI mobile network (2 collectors) in two vehicles, which will read all of the AUTHORITY’s meter locations. Collectors to be installed by Master Meter contractor.
- The Master Meter contractor will modify or replace the existing meter box so that it is a minimum of three feet deep, install Sonata Meter and Transmitter. The meter will be installed below the meter box lid. The Master Meter contractor will then program the



radio and modify the radio location if radio reception is an issue.

- As routes are converted to the radio-read system, meter technicians will be able to perform other important maintenance tasks (valve turning, hydrant maintenance, air valve maintenance, backflow program) that have previously been deferred. The AUTHORITY plans on completing this project within one year.

Assuming normal weather conditions for this project, the AUTHORITY estimates in can install 1,320 radio read meters in per year. At that rate, the AMI Meter Replacement Program will be fully implemented by October of 2024.

4.6 Evaluation Criterion F: Collaboration

Please describe how the project promotes and encourages collaboration.

The Authority is a member of the Texas Water Development Board's Region A, B, & C Planning Groups. The AMI Project is part of the Regional Water Plans, and is also in the State Water Plan. This project has support from the Texas Water Development Board, the Red River Valley Association, and the City of Wichita Falls.

The AMI meters will provide conservation stewardship for the AUTHORITY by helping to adapt to the changing environment. As described in Water for Texas, State Water Plan for Texas, 2017, the AUTHORITY's groundwater aquifers, and all basins in the watershed, are potentially threatened by increases in temperature, decreases in precipitation, and increases in population, coupled with demand for recreational activities.

4.7 Evaluation Criterion G: Additional Non-Federal Funding

There is no additional non-Federal agency funding. However, the Authority's funding of the project exceeds the Federal match at 51.4% ($\$477,150/\$927,150 = 0.514$)

4.8 Evaluation Criterion H: Nexus to Reclamation Project Activities

The project has no direct connection to a reclamation project.

SECTION 5. PERFORMANCE MEASURES

5.1.1: Performance Measures

The AUTHORITY is committed to excellence and improving the water use efficiency within the AUTHORITY's water service area. It is the goal of the AUTHORITY to fully evaluate the benefits and capabilities of the AMI technology by establishing a set of key performance measures to quantify the



project benefits. These performance measures are preliminary and will be further evaluated and refined throughout the implementation stages of the project

The AMI Meter Replacement Program will assist the AUTHORITY's staff and customers to minimize leaks, provide real time detailed usage information to the conservation department so they can be more effective, and reduce meter technician work hours and vehicle miles. Once the AMI Meter Replacement Program is fully implemented for one year, the AUTHORITY will compare the unaccounted, non-revenue water quantity before and after project completion. The AUTHORITY will compare the quantity of water associated with customer leak adjustments before and after project completion. The AUTHORITY will then compare the use-per-capita before and after project completion to determine the effectiveness of the improved conservation information. The AUTHORITY will also compare employee and vehicle expenses related to meter reading before and after project completion.

5.1.2: Measuring Devices

The project will replace existing manual meters with AMI meters. The project will include individual water user meters only. The project will replace existing manual meters with AMI meters. The project will not be installing main line meters. For residential customers, the AUTHORITY has a monthly, multi-tiered, inclining block rate which includes a monthly service charge (first 2,000 gallons are included) and a tiered structure for usage in excess of 2,000 gallons. Rates will be reviewed in early 2023; however, the AUTHORITY expects that any increases will be consistent with the previous annual increases.

5.1.3: Reasonableness of Costs

The AUTHORITY expects the TWDB to continue its efforts to reduce water use throughout the State and therefore the AUTHORITY needs to implement a strategy to reduce production on a long-term basis. The AUTHORITY already has an extensive water conservation program that has been in place for over a decade, and has reduced water GPCD by 15% since 2009. Still, the AUTHORITY must endeavor to reduce production. Consumption per capita for the AUTHORITY's customers for the 2009-2014 period averaged 118 gallons per day. The AUTHORITY can and will continue in its efforts to reduce consumption. If the AUTHORITY is to reach its targeted reduction, the focus will have to be on identifying and replacing meters that are no longer reading accurately, and identifying consumer and main line leaks earlier. The AMI system will significantly improve the ability to do so.

Master Meter provided a 20-year warranty on the meter register and radio (see Exhibit 4). Over the 20-year life of the meters, the AUTHORITY would realize savings related to the reduction in production of 145 AF per year water production at today's cost. The cost benefit of the AMI Meter Replacement Project is the increase in revenue related the additional 3% of usage that will be registered through the new meters. During the meter research, the AUTHORITY staff estimated that the AUTHORITY under-bills its customers \$155,600/year due to the meters under registering usage. The AUTHORITY will realize an estimated benefit of \$444,600 in additional revenue over the 20-year life of the AMI meters.



It is the goal of the AUTHORITY to equip employees with the adequate tools and capability to not only monitor water production and consumption but determine also to analyze and evaluate solutions and follow-up actions for all factors that may contribute to water loss. Similarly, it is the goal of the AUTHORITY to provide tools and resources to the customers so that they can comprehensively understand their water usage patterns and have access to regular feedback on the effectiveness of any activities and efforts to reduce water usage in their homes and businesses.

SECTION 6. PROJECT BUDGET

The complete AMI Project Budget includes a Funding Plan, Budget Proposal, and Budget Narrative. The SF-424C Budget Form (Budget Proposal) is attached to this application – Budget Form SF-424C.

6.1 Funding Plan

The AUTHORITY will fund 100 percent of all non-Federal project costs. The Advanced Metering Infrastructure Project will be funded from the operating budget and not CIP. Other than the funding provided by the Bureau of Reclamation under this grant application and the AUTHORITY, there are no other sources of funding necessary to complete this project. As there are no other sources of funding other than the AUTHORITY, a letter of commitment is not required for this application.

- **Cost Share Contribution:** The Utility Authority will provide its cost share in monetary (cash) contributions. The AMI Project has been and is included in the Capital Budget and is funded by water sales revenue and interest income.
- **In-kind Costs Incurred Before the Anticipated Project Start Date:** The AUTHORITY does not anticipate any in-kind costs prior to the project start date.
- **Funding Requests from other Federal Partners:** No other funding has been requested or received from other Federal partners.
- **Pending Funding Requests:** There are no pending funding requests and no other AUTHORITY projects have a direct connection to a reclamation project.

6.2 Budget Narrative

Submission of a budget narrative is mandatory. An award will not be made to any applicant who fails to fully disclose this information. The budget narrative provides a discussion of, or explanation for, items included in the budget proposal.

Table No. 8 Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCE	AMOUNT
Non-Federal Entities	
Red River Authority of Texas	\$477,150
Requested Reclamation	\$450,000



Table No. 9 Total Project Cost Table

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	\$450,000
Costs to be paid by the applicant	\$477,150
Value of third-party contributions	\$0
TOTAL PROJECT COST	\$927,150

Salaries and Wages

All Labor is provided by the AMI contractor. There are no Authority staff salary or wages ancillary to the project. No subcontractor labor will be used.

Fringe Benefits

There are no Authority fringe benefit costs applicable to the project.

Travel

There are no travel expense costs that need to be itemized under this project.

Equipment

The equipment being purchased are 2,650 Sonata auto-read meters at \$260 each, and two radio and computer reading mobile units at \$13,075 each. The total equipment cost for this project is \$715,150 (\$689,000 + \$26,150).

Supplies and Materials

There are no supplies and materials expense costs that need to be itemized under this project.

Contractual

After agreement, RRA will pay a contractor for the type of equipment (AMI). The AMI equipment includes the AMI meter, electronic transmitter, battery, wiring, and installation. This equipment is vital to the project as the AMI meters have the digital capabilities to track usage and to transmit the data to the radio receiver. The contractor installation cost is \$80.00 per meter. The contractor will install 2,650 units during years 2023 and 2024 for a total cost of \$212,000.

Environmental and Regulatory Compliance Costs

There are no environmental and regulatory compliance expense costs that need to be itemized under this project.

Other Expenses

There are no other expenses that need to be itemized under this project.

Indirect Costs

There are no indirect costs that need to be itemized under this project.

Total Costs The total cost to implement this project is **\$927,150** with a Federal cost share amount of



\$450,000 and a non-Federal cost share amount of \$477,150.

Non-federal funding will represent 51.4% of the total project costs. The AUTHORITY is requesting \$450,000 in federal funding to facilitate deployment of 2,650 radio read meters throughout the AUTHORITY's service area. The AUTHORITY will be matching this federal funding through operating revenues of \$477,150.

SECTION 7. ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants must respond to the following list of questions focusing on the NEPA, ESA, and NHPA requirements. The AUTHORITY AMI Implementation Program involves the installation of new AMI meters. There are no anticipated environmental or cultural resources impacts with the proposed project.

1) Will the project impact the surrounding environment (e.g., soil dust, air, water [quality and quantity], and animal habitat)?

There are no anticipated impacts to the surrounding environment. The new radio read meters will be installed into existing meter boxes.

2) 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 activities associated with the proposed project?

No, it is not anticipated that any species would be affected by any activities associated with the proposed project.

3) 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 project may have.

No, there are no wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States."

4) When was the water delivery system constructed?

The majority of the AUTHORITY's water systems were constructed during the 1960s to 1980s. The AUTHORITY has acquired additional small water systems over time.



- 5) ***Will the project result in any modifications of or effects to individual features of an irrigation system (e.g., head-gates, 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.***

No, the project will not result in any modifications or effects to individual features of an irrigation system.

- 6) ***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.***

No, there are no buildings, structures, or features in the project area listed or eligible for listing on the National Register of Historic Places.

- 7) ***Are there any known archaeological sites in the proposed project area?***

No, there are no known archaeological sites in the proposed project area. The new radio read meters will be installed into existing meter boxes.

- 8) ***Will the project have a disproportionately high and adverse effect on low income or minority populations?***

No, the project will not have a disproportionately high and adverse effect on low income or minority populations.

- 9) ***Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?***

No, the project will not limit access to and ceremonial use of Indian sacred sites or result in other negative impacts on tribal lands.

- 10) ***Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native species known to occur in the area?***

The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native species known to occur in the area.

SECTION 8. REQUIRED PERMITS OR APPROVALS

There are no required permits anticipated for this project. All of the project work will be conducted at current meter locations. All project-related approvals will be handled by the AUTHORITY and will be executed in a timely and efficient manner.



8.1 NEPA -National Environmental Policy Act

The AUTHORITY does not anticipate any impacts on the environment and will fit within a Categorical Exclusion to NEPA. Any environmental impacts will be minimized during construction using best management practices.

8.2 NHPA -National Historic Preservation Act

There will be no impacts on historic sites as a result of this project.

8.3 ESA -Endangered Species Act

There is no critical habitat or endangered or threatened species that will be negatively affected by this project. ·

8.4 State Permits

No State permits will be required for the project.

8.5 Local Permits

There are no other local permits that will be required for the project.

SECTION 9. LETTERS OF SUPPORT

The AUTHORITY has secured five (5) letters of support from various stakeholders. These letters are to be found in Exhibit 3 in the Exhibit section of this application. The stakeholders and representatives are as follows:

- 1) U.S. Congressional Representative 13th District – Mr. Mac Thornberry
- 2) Texas Water Development Board Region B Chair – Mr. Russell Schreiber, P.E.
- 3) Texas Water Development Board Region B Engineer – Mr. Kerry D. Maroney, P. E.
- 4) Red River Valley Association Executive Director – Mr. Richard Brontoli
- 5) NORTEX Regional Planning Commission Executive Director – Mr. Dennis Wilde

SECTION 10. OFFICIAL RESOLUTION

An official resolution meeting the requirements set forth above is mandatory. An official resolution of the Red River Authority of Texas was passed at the meeting of the Board of Directors on July 15, 2020. The Resolution is attached to this application.

The resolution verifies the AUTHORITY's legal authority to enter into an agreement; the Board of Directors has reviewed and supports submittal of this application; the capability of the Authority to provide the amount of funding and in-kind contributions specified in the Funding Plan; and that the Authority will work cooperatively with the Bureau of Reclamation to meet established deadlines for entering into a cooperative agreement.

SECTION 11. ATTACHMENTS



Exhibit 2. Official Resolution of the Red River Authority of Texas

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RED RIVER AUTHORITY OF TEXAS



RESOLUTION No. 2020-011

STATE OF TEXAS §

COUNTY OF WICHITA §

A RESOLUTION OF THE Board of Directors of the Red River Authority of Texas stating its support of an application with the United States Bureau of Reclamation for a grant under their 2021 WaterSMART: Water and Energy Efficiency Grants Program:

WHEREAS, the Red River Authority of Texas is a Conservation and Reclamation District encompassing all or part of 43 Texas counties located within the Red River Watershed in Texas; and

WHEREAS, periodically the Red River Authority of Texas has an opportunity to accept grant funds available through public or private sources, which funds facilities and programs the Authority would otherwise be required to finance through other sources; and

WHEREAS, acceptance of such grant funds also require the execution of grant agreements and the Board of Directors of the Red River Authority of Texas can legally enter into a grant agreement with the United States Bureau of Reclamation; and

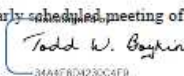
WHEREAS, the United States Bureau of Reclamation is currently soliciting proposals for grant funding assistance under their 2021 WaterSMART: Water and Energy Efficiency Grants Program; and

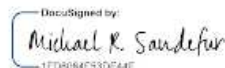
WHEREAS, the Red River Authority of Texas staff have formulated a project improvement grant proposal, referred to as the Advanced Metering Infrastructure Program, which has the support of surrounding water stakeholders and communities; and would be funded by a combination of the Red River Authority of Texas funds, in-kind services, and Bureau of Reclamation grant funds; and

NOW THEREFORE BE IT RESOLVED, by the Board of Directors as follows:

- A. The Board of Directors has reviewed and supports the grant application to the United States Bureau of Reclamation entitled Advanced Metering Infrastructure Program.
- B. The Red River Authority of Texas is capable of providing the amount of funding and in-kind contributions specified in the application; and
- C. The Red River Authority of Texas will work with the United States Bureau of Reclamation to meet established deadlines for entering into a cooperative agreement.
- D. The Board of Directors will reconvene in a timely manner to enter into an agreement with the United States Bureau of Reclamation, should a grant award be made to the Red River Authority of Texas.

PASSED AND APPROVED this the 15th day of July, 2020 at a regularly scheduled meeting of the Board of Directors by a vote of 7 FOR and 0 AGAINST.


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DocuSigned by:

17D8684F5A0744F

Todd W. Boykin
President

Michael R. Sandefur
Secretary / Treasurer



Exhibit 3. Letters of Recommendation

MAC THORNBERRY
13TH DISTRICT
TEXAS



ARMED SERVICES COMMITTEE
RANKING MEMBER

Congress of the United States House of Representatives

September 9, 2020

Mr. Ned Weakland
Bureau of Reclamation
Financial Assistance Operations
P.O. Box 25007, MS 84-27815
Denver, CO 80225

Dear Mr. Weakland,

I am writing in support of the Red River Authority of Texas and its efforts to obtain grant funding through the WaterSMART: Water and Energy Efficiency grant program.

The Red River Authority of Texas is responsible for providing the water needs of approximately 10,000 customers in the North Texas region within the Red River Basin which includes 43 counties and much of my Congressional district. The Red River Basin provides a vital resource for the residents of North Texas and must be maintained responsibly. This grant would enable the Red River Authority of Texas to implement an Advanced Metering Infrastructure Program, which includes the installation of 3,345 new water meters with radio and computer reading equipment for residential and commercial customers.

Within your rules and regulations, I respectfully ask that you give this application your full consideration.

Sincerely,

Mac Thornberry
Member of Congress

WMT/JM

620 SOUTH TAYLOR STREET, SUITE 200
ASHBLETT, TX 79101-1436
PHONE: 806-371-8844
FAX: 806-371-7044

2200 BAYVIEW HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-4313
PHONE: 202-225-3706
FAX: 202-225-3486

www.house.gov/thornberry

2525 KELL BOULEVARD, SUITE 406
WICHITA FALLS, TX 76108-1061
PHONE: 940-692-1700
FAX: 940-692-0532



Regional Water Planning Group - Area B

in cooperation with the Texas Water Development Board



September 8, 2020

Mr. Ned Weakland
Bureau of Reclamation
Financial Assistance Operations
P.O. Box 25007, MS 84-27815
Denver, CO 80225

Re: **Bureau of Reclamation WaterSMART Grant Application: The Red River Authority of Texas "Advanced Metering Infrastructure Project"**

Dear Mr. Weakland:

On behalf of the Regional Water Planning Group – Area B (RWPG-B), it is my pleasure to send a letter in support of the Red River Authority of Texas in its plan to implement the "Advanced Metering Infrastructure Project". This project will provide increased accessibility to water supplies that would otherwise be lost or unaccounted for, in addition to promoting the critical need for water conservation throughout the North Texas region. The Red River Authority of Texas has deemed it necessary to ensure a reliable supply of water through water conservation to help meet future water demands.

The RWPG-B appreciates the need for water conservation, especially in the midst of potential droughts, as this region of Texas has already experienced in the recent past. The Red River Authority of Texas is responsible for providing the water needs of approximately 10,000 customers in the North Texas region within the Red River Basin. It is important to note that Red River Authority of Texas serves rural and underserved populations across North Texas. The distinctive hydrogeological and topographic elements of the Red River Basin provide a vital local resource of surface and ground water that needs to be conserved and protected. The proposed Advanced Metering Infrastructure Project would provide for the replacement of approximately 3,345 antiquated analog meters with advanced digital metering and radio reading technology. This project enhances local, state, and federal water conservation objectives by measuring water production, usage, and leakage, which will result in quantifiable water and energy savings.

I hope this expression of support from the RWPG-B is helpful in your consideration of the Red River Authority of Texas' application.

Sincerely,

REGIONAL WATER PLANNING GROUP – AREA B

Russell Schreiber, P.E.
Chair

RS:slg

Cc: Mr. Fabian Heaney, Red River Authority of Texas
Mr. Randy Whiteman, Red River Authority of Texas

Board Members
Mr. Russell Schreiber, Chair
Mr. Mike McGuire, Vice-Chair
Mr. Dean Myers, Secretary
Ms. Pamela Armstrong
Mr. Jimmy Banks
Mr. J.K. (Rooter) Britz
Judge Mark Christopher
Ms. Carrie Dodson
Mr. Tommy Holub
Judge Randall C. Jackson
Mr. Darell Kennon
Mr. Steve Lewis
Mr. Tracy Mesler
Mr. Kyle Miller
Mr. Heath Ownbey
Mr. Jerry Payne
Mr. Wilson Scalling
Mayor Pro-Tem Gayle Simpson
Mr. Randall W. Whiteman

Post Office Box 240
Wichita Falls, Texas
76307-0240
3000 Hammon Road
76310-7500
Phone (940) 723-2236
Fax (940) 723-8531
rwpg-b@rra.texas.gov





BIGGS & MATHEWS INC.

Consulting Engineers

September 01, 2020

Bureau of Reclamation
Financial Assistance Operations
Attn: Mr. Ned Weakland
P.O. Box 25007, MS 84-27815
Denver, CO 80225

Re: Bureau of Reclamation WaterSMART Grant Application: The Red River Authority of Texas "Advanced Metering Infrastructure Project"

Dear Mr. Weakland,

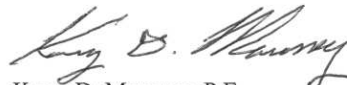
It is my pleasure to send a letter in support of the Red River Authority of Texas in its plan to implement the "Advanced Metering Infrastructure Project". This project will provide increased accessibility to water supplies that would otherwise be lost or unaccounted, in addition to promoting the critical need for water conservation throughout the North Texas region. The Red River Authority of Texas has deemed it necessary to ensure a reliable supply of water through water conservation to help meet future water demands.

I appreciate the need for water conservation, especially in the midst of potential droughts, as this region of Texas has already experienced in the recent past. The Red River Authority of Texas is responsible for providing the water needs of approximately 10,000 customers in the North Texas region within the Red River Basin. It is important to note that Red River Authority of Texas serves rural and underserved populations across North Texas. The distinctive hydrogeological and topographic elements of the Red River Basin provides a vital local resource of surface and ground water that needs to be conserved and protected. The proposed Advanced Metering Infrastructure Project would provide for the replacement of approximately 3,345 antiquated analog meters with advanced digital metering and radio reading technology. This project enhances local, state, and federal water conservation objectives by measuring water production, usage, and leakage, which will result in quantifiable water and energy savings.

I hope this expression of support is helpful in your consideration of the Red River Authority of Texas application.

Sincerely,

Biggs & Mathews, Inc.



Kerry D. Maroney, P.E.

RED RIVER VALLEY ASSOCIATION

629 SPRING STREET
P.O. BOX 709
SHREVEPORT, LA 71162-0709
(318) 221-5233

August 31, 2020

Bureau of Reclamation
Financial Assistance Operations
Attn: Mr. Ned Weakland
P.O. Box 25007, MS 84-27815
Denver, CO 80225

**Re: Bureau of Reclamation WaterSMART Grant Application: The Red River Authority of Texas
"Advanced Metering Infrastructure Project"**

Dear Mr. Weakland,

It is my pleasure to send a letter in support of the Red River Authority of Texas in its plan to implement the "Advanced Metering Infrastructure Project". This project will provide increased accessibility to water supplies that would otherwise be lost or unaccounted, in addition to promoting the critical need for water conservation throughout the North Texas region. The Red River Authority of Texas has deemed it necessary to ensure a reliable supply of water through water conservation to help meet future water demands.

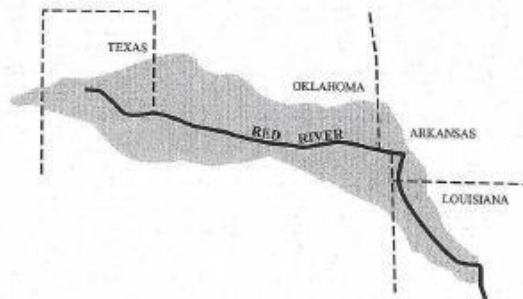
I appreciate the need for water conservation, especially in the midst of potential droughts, as this region of Texas has already experienced in the recent past. The Red River Authority of Texas is responsible for providing the water needs of approximately 10,000 customers in the North Texas region within the Red River Basin. It is important to note that Red River Authority of Texas serves rural and underserved populations across North Texas. The distinctive hydrogeological and topographic elements of the Red River Basin provides a vital local resource of surface and ground water that needs to be conserved and protected. The proposed Advanced Metering Infrastructure Project would provide for the replacement of approximately 3,345 antiquated analog meters with advanced digital metering and radio reading technology. This project enhances local, state, and federal water conservation objectives by measuring water production, usage, and leakage, which will result in quantifiable water and energy savings.

I hope this expression of support is helpful in your consideration of the Red River Authority of Texas application. I can be contacted at: rrva@rrva.org, (318) 393-6207.

Sincerely,



Richard Brontoli
Executive Director



A FOUR STATE ASSOCIATION DEDICATED TO THE DEVELOPMENT OF THE LAND AND WATER RESOURCES OF THE RED RIVER BASIN



P.O. Box 5144
Wichita Falls, Texas 76307
Area 940-322-5281
Fax 940-322-6743

September 2, 2020

Bureau of Reclamation
Financial Assistance Operations
Attn: Mr. Ned Weakland
P.O. Box 25007, MS 84-27815
Denver, CO 80225

Re: Bureau of Reclamation WaterSMART Grant Application: The Red River Authority of Texas "Advanced Metering Infrastructure Project"

Dear Mr. Weakland,

It is my pleasure to send a letter in support of the Red River Authority of Texas in its plan to implement the "Advanced Metering Infrastructure Project". This project will provide increased accessibility to water supplies that would otherwise be lost or unaccounted, in addition to promoting the critical need for water conservation throughout the North Texas region. The Red River Authority of Texas has deemed it necessary to ensure a reliable supply of water through water conservation to help meet future water demands.

As director of a Planning Commission in this region, I appreciate the need for water conservation, especially in the midst of potential droughts, as this region of Texas has already experienced in the recent past. The Red River Authority of Texas is responsible for providing the water needs of approximately 10,000 customers in the North Texas region within the Red River Basin. It is important to note that Red River Authority of Texas serves rural and underserved populations across North Texas. The distinctive hydrogeological and topographic elements of the Red River Basin provides a vital local resource of surface and ground water that needs to be conserved and protected. The proposed Advanced Metering Infrastructure Project would provide for the replacement of approximately 3,345 antiquated analog meters with advanced digital metering and radio reading technology. This project enhances local, state, and federal water conservation objectives by measuring water production, usage, and leakage, which will result in quantifiable water and energy savings.

I hope this expression of support is helpful in your consideration of the Red River Authority of Texas application.

Sincerely,

A handwritten signature in black ink, appearing to read "Dennis Wilde". The signature is fluid and cursive, written over a light blue horizontal line.

Dennis Wilde
Executive Director