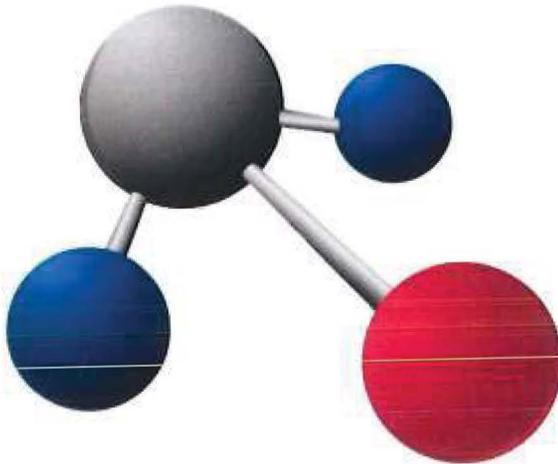


**REMOTE READ  
WATER METER  
PROJECT**

**PREPARED FOR:**

**Grand Forks  
Trail Water  
District,  
Grand Forks, ND**



APR 12 '17 PM 2:49

*Funding Announcement No. BOR-DO-17-F011*

*AE2S Project No. P00111-2016-001*

March 20, 2017

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**PROJECT PROPOSAL**  
**WaterSMART:**  
**Water and Energy Efficiency**  
**Grants for FY 2017**

**Advanced Engineering and Environmental Services, Inc.**  
4050 Garden View Dr Ste 200, Grand Forks, ND 58201  
(t) 701-746-8087 (f) 701-746-0370 [www.ae2s.com](http://www.ae2s.com)

**PROJECT PROPOSAL FOR BUREAU OF RECLAMATION  
FUNDING ANNOUNCEMENT NO. BOR-DO-17-F011**

**GRAND FORKS-TRAILL WATER DISTRICT  
REMOTE READ WATER METER PROJECT**

**SUBMITTED BY  
NEIL BREIDENBACH, MANAGER  
GRAND FORKS-TRAILL WATER DISTRICT  
1401 7<sup>th</sup> Ave NE,  
THOMPSON, ND 58278**

**March 20, 2017**

Prepared By:  
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I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of North Dakota.



Geoffrey Slick, PE

Date: 3-20-17

Reg. No: PE-9235

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## **1.0 EXECUTIVE SUMMARY**

Grand Forks Traill Water District (GFTWD) located in Thompson, North Dakota proposes to add new residential Automatic Meter Read (AMR) systems, which are composed of AMR compatible meters and SmartPoint heads, to all traditional and bulk users within the GFTWD system. The AMR system would be able to provide real time data to GFTWD staff rather than having to manually read meters to decipher if the user is using water, leaking water, or stealing water. The current meter arrangement does not allow for proper leak detection throughout the system due to the fact the meters are older manual read meters.

The intent of the proposed project is to begin the first phase of AMR system installation, which would impact 395 of 2,749 GFTWD users. GFTWD plans on phasing the first part of the AMR meter project over the course of eight months, with a completion date of March, 2018. GFTWD staff have been entering users households, testing and replacing faulty residential meters, and upgrading with new manual read meters that are compatible with AMR Meter and SmartPoint technology. Currently, there are not any GFTWD users that have AMR systems, but some of which have manual read meters that are AMR compatible.

If awarded the WaterSMART grant, GFTWD would be able to start implementing the proposed water meter replacement project. The savings earned from reducing water loss could help offset the need to raise users water rates. Grant funding will be used as a 50% contribution to the project, while the other 50% of project funding would be contributed by GFTWD through monetary, in kind work, equipment, labor, materials, and installation of the AMR systems.

Presently, water loss throughout the system is 227.28 AF/yr, or 26.12%, through leaks and stolen water. Also, it is estimated that GFTWD customers lose 62.68 AF/yr through residential plumbing. System water loss coupled with residential water loss resulted in an estimated annual water loss of 289.96 AF/yr in 2016. Under the WaterSMART grant GFTWD expects that they will reduce water loss by  $32.66 \text{ AF/yr} + 9.01 \text{ AF/yr} = 41.67 \text{ AF/yr}$  with the installation of the initial 395 AMR Systems. By implementing the proposed project, over the course of the next 7 years with assistance from The Bureau of Reclamation (Reclamation), it is estimated that GFTWD could save up to 289.96 AF/yr in water loss by the time all users in the system have transitioned to AMR systems, ultimately conserving water and promoting energy efficiency.

GFTWD is looking to expand its system to accommodate more users who are in need of rural water. GFTWD is looking potentially merging with nearby Traill Rural Water District (TRWD). Currently TRWD has AMR systems installed within approximately half of their users. If the two systems merge, it would be extremely beneficial to have the same metering structure.

GFTWD has not participated with the Reclamation in any previous projects, but is looking forward to the opportunity of partnering with Reclamation on the proposed meter replacement project.

## 2.0 BACKGROUND

### 2.1 Project Location

GFTWD currently serves rural users in the Northern half of Traill County, Southern half of Grand Forks County, and some users located in east Steele County. GFTWD's office is located in Thompson, North Dakota. GFTWD currently receives finished water from their water treatment plant (WTP) located in the northwest region of their system, southeast of Larimore, North Dakota. The area outlined in yellow is the proposed project area, in which the initial 395 AMR systems will be installed under the proposed WaterSMART Grant Project. It should be noted that not all depictions in Figure 1.1 are to scale.

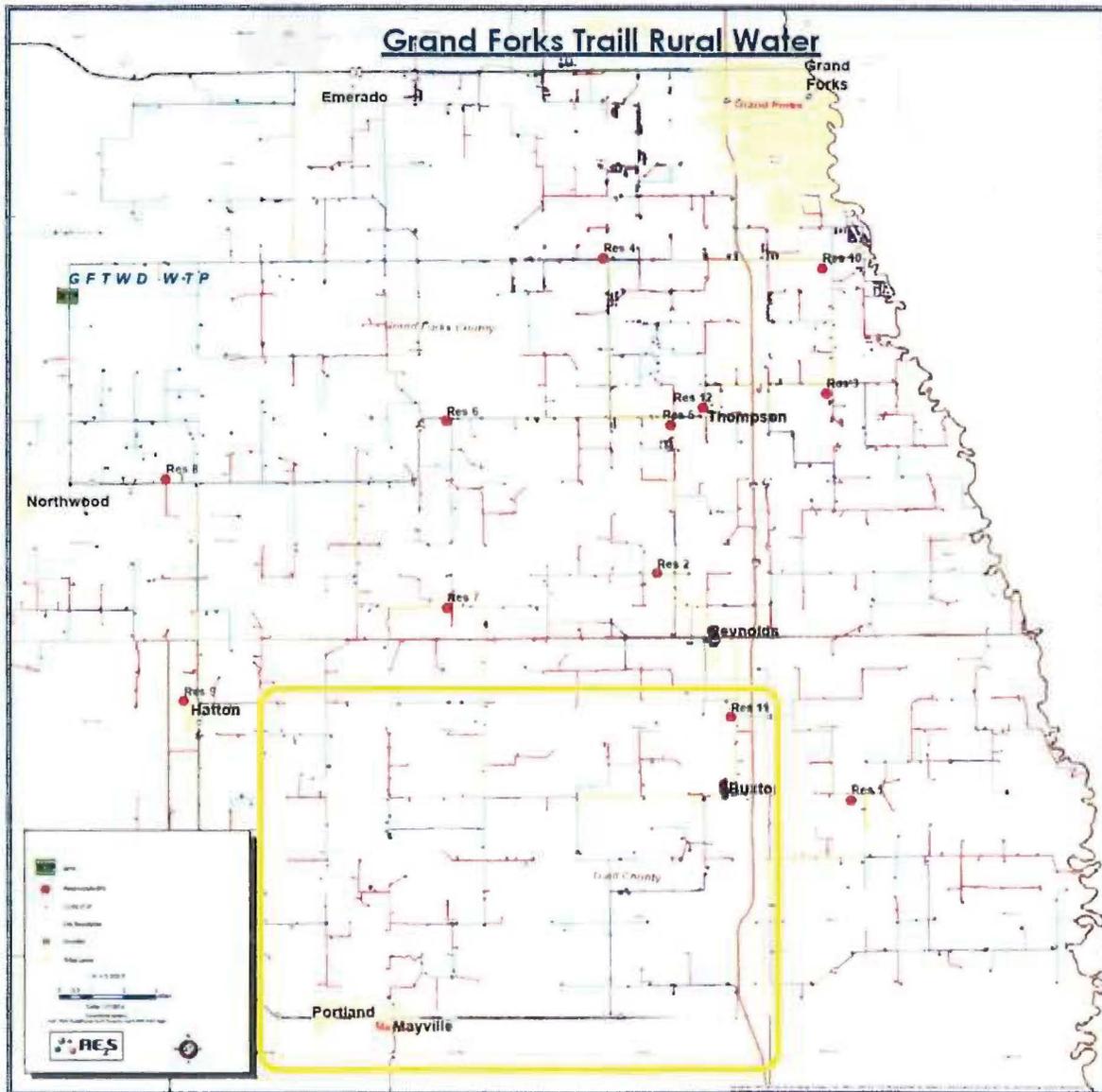


Figure 1.1: Grand Forks Trail Water District

**2.2 Grand Forks Trail Water District**

**2.2.1 System Composition**

GFTWD was organized as a non-profit corporation in June of 1969 and later became a water district in August of 2000. The initial system was fully operational in 1972, serving approximately 740 customers consisting of rural farmsteads, and the communities of Thompson, Reynolds, and Buxton, with bulk service to Hatton. Through continued expansion, the current total rural customers have increased to approximately 2,749, not including bulk service to the communities of Arvilla, Emerado, Northwood, and Marshall-Polk Rural Water System. The total population served, including the bulk users, is an estimated 7,800. The system is composed of the items listed below:

- One (1) WTP located 6.5 miles southeast of the City of Larimore.
- Two-hundred twenty seven (227) miles of 5-inch to 10-inch PVC transmission pipeline.
- Eight-hundred forty five (845) miles of 1.5-inch to 4-inch PVC distribution pipeline.
- One (1) well field consisting of 15 wells.
- Twelve (12) water transfer stations/reservoirs.

GFTWD’s role is to provide fresh water to its users throughout the system. This is achieved through means of water treatment and distribution. GFTWD has 15 wells from which they obtain water. The water from the aforementioned wells is pumped three (3) miles to the GFTWD water treatment facility, which is located near Larimore, ND. The water is treated through means of iron-manganese greensand followed by reverse osmosis membranes. Post-treatment the water is sold to the users and delivered to them via 5-inch to 10-inch PVC transmission pipelines and 1.5-inch to 4-inch PVC distribution pipelines. Table 2.1, as can be seen below, demonstrates the storage volume capacity of the system.

| Reservoir ID         | Storage Volume   |
|----------------------|------------------|
|                      | (gallons)        |
| Reservoir #1         | 40,000           |
| Reservoir #2         | 40,000           |
| Reservoir #3         | 40,000           |
| Reservoir #4         | 40,000           |
| Reservoir #5         | 80,000           |
| Reservoir #6         | 40,000           |
| Reservoir #7         | 40,000           |
| Reservoir #8         | 40,000           |
| Reservoir #9         | 40,000           |
| Reservoir #10        | 40,000           |
| Reservoir #11        | 40,000           |
| Reservoir #12        | 300,000          |
| WTP Clearwell        | 925,000          |
| <b>Total Storage</b> | <b>1,705,000</b> |

**Table 2.1 – Storage Capacity**

**2.2.2 Water Source**

The GFTWD system currently utilizes the Elk Valley Aquifer to obtain its water supply, which is a ground water supply located in west central Grand Forks County. It is estimated that GFTWD will require 1,340 AF of water per year from the Elk Valley Aquifer to meet the 30 year long term needs of the system. Currently, GFTWD holds seven perfected permits to divert water from Elk Valley Aquifer. Information about each permit, including the permit number and withdrawal rate limitations, is presented below in Table 2.2.

| Permit No.     | Acre-Ft.     | Rate (gpm)   | Status    |
|----------------|--------------|--------------|-----------|
| 1563           | 112          | 215          | Perfected |
| 1795           | 250          | 400          | Perfected |
| 2497           | 150          | 400          | Perfected |
| 3095           | 350          | 490          | Perfected |
| 3188           | 150          | 400          | Perfected |
| 3490           | 400          | 500          | Perfected |
| 4044           | 300          | 350          | Perfected |
| <b>Total =</b> | <b>1,712</b> | <b>2,755</b> |           |

**Table 2.2:** GFTWD Elk Valley Aquifer Water Permit Data

**2.2.3 Water Conveyance**

The raw water from the well field is conveyed from the fifteen (15) wells through three (3) miles of transmission pipelines to the GFTWD treatment facility. The water is then pumped from the WTP to prospective consumers.

GFTWD serves 2,749 rural users as well as bulk services to the cities of Arvilla, Emerado, Hatton, and Northwood. These customers are served via 1,072 miles of transmission and distribution pipelines, and twelve reservoirs/pumping stations.

GFTWD currently sells 185.21 AF/yr of water to bulk accounts and 457.23 AF/yr to 2,749 individual user accounts, which equates to 0.17 AF per user per year. In 2016, GFTWD pumped 870.01 AF from its WTP, but only sold a total quantity of 642.74 AF to its users. This equates to a net loss of 227.28 AF or 26.12% of the total system volume pumped.

**2.3 Bureau of Reclamation Involvement**

GFTWD has yet to work on any projects with Reclamation, but is looking forward to this possible opportunity.

## **3.0 TECHNICAL PROJECT DESCRIPTION**

### **3.1 Scope of Work**

#### **3.1.1 Distribution System Losses**

Due to recent water loss and lack of revenue throughout the GFTWD system, staff members have been entering user's residences and have been testing and replacing faulty residential meters, and upgrading with new manual read meters that are compatible with AMR and SmartPoint technology. AMR meters automatically collect consumption from the water meter and then transfer the data to a central database for billing. In order for the data to be transferred, a SmartPoint head needs to be installed with each AMR meter. The SmartPoint head is a radio transceiver that gives the operator radio frequency inbound and outbound access to water measurements and ancillary device diagnostics. These SmartPoint heads collect data from the AMR meter, register the data, and then proceed by transmitting this data to a collection device, in this instance a tablet. GFTWD will use the walk-by/drive-by method; the SmartPoint will continuously collect data and wait for an activation signal from the tablet when it is within the required distance. Once the signal is received by the SmartPoint, meter readings are transmitted to the tablet.

The installation of new remote read meters would not replace faulty meters with the same type meter, but rather replace existing manual read meters with new technologies to better assist with water conservation by being able to utilize AMR technologies. AMR meter technology is far superior to the original manual read meters that exist in the system. Currently, GFTWD user's read and report their meter readings each month and are billed according to the reported reading. The manual read meter system allows for discrepancies between the actual water used versus the reported water use. These discrepancies could be accidental recording errors or even intentional reporting errors by the water user. Water theft from GFTWD customers has been an ongoing problem within the system; AMR systems will alleviate the issue. With new AMR systems in place, GFTWD users will no longer have to read and report their monthly meter readings. Data will be transmitted via the SmartPoint heads, which are installed with the AMR meter, and automatically transmit to the tablet that the GFTWD employee's use.

The new AMR meter system is anticipated to reduce system water loss by allowing GFTWD operators the ability to find water that is lost through leaks in the distribution system or stolen by GFTWD users. GFTWD is divided into 13 different metered zones, therefore having a master meter showing how much water is being pumped to each zone, paired with residential meters record the amount of water being consumed at any given time; GFTWD will be able to locate problem areas and remedy the potential water loss problems.

GFTWD intends to implement this project in the yellow outlined area as previously seen in Figure 1.1. This area has been selected because it is composed of the oldest infrastructure of the system and has a master meter at Reservoir 11, by which water pumped can be properly tracked. By having the ability to monitor the water pumped

from Reservoir 11 and water consumed at each individual meter within the defined area, GFTWD will be able to successfully track progress and determine the overall effectiveness of the new meters.

Water loss throughout the GFTWD distribution system was 227.28 AF in 2016. It is anticipated the addition of the new AMR meters acquired by this grant over the next several months will help GFTWD reduce water loss from 227.28 AF to  $\sim 227.28 - (395 \text{ users} / 2,749 \text{ users}) * 227.28 \text{ AF} = 194.62 \text{ AF}$ . Therefore, under the proposed WaterSMART project, an estimated 32.66 AF of water loss will be eliminated from the distribution system, due to the addition of 395 AMR meters and SmartPoint heads.

### 3.1.2 Residential Losses

Currently, a study conducted by the Environmental Protection Agency (EPA) states that average water loss through a residential home, i.e. leaky appliances or plumbing, is 13.7% of total water use. Therefore, it is estimated that each GFTWD resident loses  $13.7\% \times 0.17 \text{ AF}$  (see section 2.2.3) = 0.023 AF/yr through residential plumbing leaks.

The total water loss that can be attributed to GFTWD residential plumbing for 2,749 users  $\times 0.023 \text{ AF/yr}$  equates to 62.68 AF/yr. Being that this project would only account for 395 of the 2,749 users, it is anticipated 9.01 AF in the first year will be saved from losses within residential plumbing. Under the WaterSMART grant, GFTWD anticipates that they could reduce water loss by  $32.66 \text{ AF/yr} + 9.01 \text{ AF/yr} = 41.67 \text{ AF/yr}$  after the installation of the first 395 AMR systems.

## 3.2 Purpose and Objective

With potential funds from this WaterSMART grant, GFTWD is looking to start automating and updating its system by implementing a multi-year meter replacement project. In order to start automating the system GFTWD needs to purchase 395 AMR systems. These systems are composed of 395 AMR capable meters and 395 SmartPoint heads. The estimated material costs, which include AMR meters and SmartPoint heads, will be a total of \$93,615.00. The material cost will be funded in part by GFTWD and by the WaterSMART grant. This grant requires that half of the project cost is funded by the recipient; hence GFTWD plans to fund \$74,959.78 towards the project through monetary, in-kind work, equipment, labor, and materials from GFTWD installation of AMR systems. While Reclamation funds \$74,655.00 via the WaterSMART Grant. It is anticipated that total project cost will be \$149,614.78; a budget breakdown can be seen in Table 8.2.

In 2016, GFTWD's water loss was 227.28 AF. The annual water loss was calculated by taking the water treated by GFTWD less the water sold to the customers. Similar, water districts throughout the region have a system water loss of 0-5%. The final objective of this phased project would be to reduce the water loss to a value close to 0% over the course of the phased project.

Additional water loss reduction will be achieved by being able to obtain real time data of the water leaving the master meters and the water entering the users residential AMR

meters throughout the whole system. This will allow GFTWD to easily detect leaks by knowing where water is being used when they are looking at real time data. The water can be narrowed from larger branches to smaller branches. By minimizing project area, leaks will more easily be found, detected and fixed. The ability to track down and repair the leaks is proposed to cut system water losses down from 26.12% to ~0% over the course of the multi-year project.

GFTWD, will also be able to more readily determine if a user has a problem within their plumbing, by trends of irregular water use. The proposed AMR systems would allow for GFTWD to find irregularities within individual water use. Leaks in plumbing can be found by closing valves, which isolate the individual branches of pipe or even residences. GFTWD staff will then be able to watch the new AMR meters in real time to see if any water is flowing. If water is being lost within residential plumbing, staff will see the AMR meters move within the residences. If there is water loss in the distribution system staff will be able to monitor the master meter in reservoir 11 and determine if any water is moving through the system even though the valves should have the water isolated. If the meter is increasing, water is being lost. Observation of the trends provided by the AMR meters will help GFTWD to know when to notify the user of the irregular water use. This gives the user a chance to fix the problem, in turn saving both the district and the user water loss.

**3.3 Proposed Project Schedule**

Based on the anticipated project requirements, a proposed schedule for project implementation is presented in Table 3.1. A change in scope would most likely be related to funding approval or the ability to obtain the required amount of meters from the supplier. It is unlikely that legal or financial troubles would delay progress schedule. It is anticipated that fifty (50) AMR systems will be installed per month.

| Date            | Event  | Anticipated Monthly Expenses |
|-----------------|--|------------------------------|
| Mar-17          | Submit Proposal  | \$6,000                      |
| Mar – July 2017 | Await approval of funding/begin scheduling AMR System installation | -                            |
| Aug-17          | Install Meters 1-50  | \$18,179.09                  |
| Sep-17          | Install Meters 51-100  | \$18,179.09                  |
| Oct-17          | Install Meters 101-150   | \$18,179.09                  |
| Nov-17          | Install Meters 151 – 200   | \$18,179.09                  |
| Dec-17          | Install Meters 201-250   | \$18,179.09                  |
| Jan-18          | Install Meters 251 – 300   | \$18,179.09                  |
| Feb-18          | Install Meters 301– 350  | \$18,179.09                  |
| Mar-18          | Install Meters 351 – 395   | \$16,361.18                  |

**Table 3.1 – Proposed Progress Schedule**

## **4.0 EVALUATION CRITERIA**

### **Application Evaluation Scoring Criteria (Answers seen in blue)**

#### **E.1.1. Evaluation Criterion A—Planning Efforts Supporting the Project (35 points)**

Describe how your project is supported by an existing planning effort.

- Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?

GFTWD has an extensive planning effort in place. One of the steps of this existing planning effort is to reduce water loss via proper water metering. With the installation of 395 AMR systems GFTWD will be able to begin the metering step of its water plan. GFTWD intends on phasing out all of the older manual read water meters and replacing them with AMR systems. Currently, most of the users on the GFTWD system have the older manual read meters, it is GFTWD's intent to phase all of these out over the course of the next seven years with grant assistance if available.

- Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures.

The proposed project has been determined a priority among many other proposed measures due to the importance of water loss, which corresponds with a loss of income for GFTWD. Currently, GFTWD is losing 227.28 AF of water a year or 74,057,833 gallons. This amounts to a value of 74,057,833 gallons x \$5.78/1000 gallons = \$428,054.27 in revenue lost annually. Water loss can be generally attributed to three different factors: leaks in the system, faulty meters, or water theft.

Due to the age and condition of older meters, GFTWD believes a majority of its water loss can be attributed to faulty meters. Also, GFTWD has had issues with water theft from homeowners intentionally providing misleading meter readings over the years. With the addition of the AMR systems, water users will not have the opportunity to provide false meter readings because of the new automation technology within AMR systems. With the incorporation of this WaterSMART grant, it is expected that GFTWD will be saving 32.66 AF of water in the first year, which corresponds to \$61,506.53 in revenue loss savings. By the time the GFTWD system is automated, it is anticipated GFTWD will save a total of 74,057,833 gallons per year and \$428,054.27 in revenue loss.

#### **E.1.2. Evaluation Criterion B—Project Benefits (35 points)**

- Describe the expected benefits and outcomes of implementing the proposed project.

- What are the benefits to the applicant's water supply delivery system?

GFTWD will strive to reduce water loss within their system to close to 0%. Currently, the 2,749 residential meters are manual read meters. The meters are supposed to be read each month by the residents, with the monthly usage sent to GFTWD for calculation of payment. However, many users do not read their meters or do not read them correctly. When a meter is misread GFTWD, staff are not aware of how much water they are

actually losing month to month. The AMR systems will allow GFTWD to trend the amount of water lost daily. Also, it will provide GFTWD the opportunity to track the amount of water that passes through the residential meters on a real time basis. Not only will this allow GFTWD to track leaks that users may have throughout their current plumbing or that reside throughout the distribution system, but it will also help ensure the safety of the water users.

The 26.12% (227.28 AF) water loss throughout the delivery system coupled with the EPA's average of 13.7% (62.68 AF) lost through home owner's appliances amounts to 289.96 AF/yr of water lost per year. The new meter technology will not only help GFTWD operators track down leaky system branches, but it will help customers conserve water by being notified by GFTWD when water use seems erratic or out of the ordinary.

After the project is complete, GFTWD will monitor water usage and water pumped daily. They will determine the most likely areas water is being lost or stolen. They will concentrate their efforts to these areas to fix the problems. Each month they will compare water loss to previous year. The idea would be to trend water loss from 26.12% to approximately 0% throughout the system over the course of the project. GFTWD intends to remedy these problem areas by fixing leaks that are found in the distribution system, and by closely monitoring water usage GFTWD will be able to more easily locate areas of unauthorized connection and ensure all current users are metered properly.

In 2016, 227.28 AF of water was lost throughout the distribution system, this amounts to 74,057,833 gallons. GFTWD charges customers \$5.78 per 1000 gallons of water used, which means GFTWD lost \$428,054.27 in revenue for 2016. With the addition of the 395 new AMR meters systems GFTWD believes that \$61,506.53 and approximately 10,641,267 gallons would be saved in the first year.

- If other benefits are expected explain those as well. Consider the following:
  - Extent to which the proposed project improves overall water supply reliability  
See above.
  - The expected scope of positive impact from the proposed project (e.g., local, sub-basin, basin)  
Does Not Apply.
  - Extent to which the proposed project will increase collaboration and information sharing among water managers in the region

GFTWD expects the AMR systems to drastically reduce system water loss, because GFTWD has already seen the positive trends of water loss reduction in several nearby water systems that can be contributed to AMR technologies. The managers of these systems, which utilize AMR technologies, have been giving presentations to other managers and board members of systems which have the older style meters and demonstrating the effectiveness of AMR systems. Once, these presentations are heard, system owners are able to incorporate/budget for the appropriate AMR systems that will suit them best, increasing water conservation throughout the region.

- Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism)

Utilizing new AMR technologies will reduce the amount of water that will be lost throughout the system. With a more efficient system more capacity will be created that can be used to benefit the agricultural sector. During spray season, the system is generally stretched to its capacity limits, by eliminating water loss more capacity will be generated, providing more flow for farmers to use for spraying. When water loss is reduced, there would also be a benefit to the environment. Aforementioned benefits can be attributed to less chemicals used during water production and less power used for the pumping of the lost water. The utilization of new AMR technologies will also help to keep water rates low, since GFTWD will not have to account for water loss in its future pricing.

### **E.1.3. Evaluation Criterion C—Project Implementation (15 points)**

- Describe the implementation plan for 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.

See Section 3.3.

- Describe any permits that will be required, along with the process for obtaining such permits.

No permits will be required.

- Identify and describe any engineering or design work performed specifically in support of the proposed project.

With the proposed project the only engineering and design work performed is the WaterSMART Grant Report.

- Describe any new policies or administrative actions required to implement the project.

In order to implement this project, the GFTWD Board of Directors had to approve the spending of the total project costs.

### **E.1.4. Evaluation Criterion D—Nexus to Reclamation (15 points)**

- How is the proposed project connected to a Reclamation project or activity?

GFTWD has not worked with Reclamation in the past but is looking forward to the possibility of partnering on this 2017 WaterSMART project and other potential future ventures.

- Will the project help Reclamation meet trust responsibilities to any tribe(s)?

No tribes are located in the proposed project area.

- Does the applicant receive Reclamation project water?

GFTWD does not receive Reclamation project water.

- Is the project on Reclamation project lands or involving Reclamation facilities?

The project is not on Reclamation project lands and does not involve Reclamation facilities.

- Is the project in the same basin as a Reclamation project or activity?

Not Applicable.

- Will the proposed work contribute water to a basin where a Reclamation project is located?

Not Applicable.

## **5.0 ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE**

### **5.1 Environmental Impact**

The environmental impacts are beneficial for the proposed project. The environmental benefits will outweigh any detriments to this project. The environmental impacts recognized from reducing water loss would be directly proportional to chemicals used during water production and power used for the additional pumping of the lost water; however these would be hard to quantify. The power/chemical reduction although not extensive is a way of making a more "green" system. Also, there will be no new ground disturbance so no environmental impacts are anticipated.

### **5.2 Environmental Compliance Questions**

Below are the questions from the FOA Section IV.D.6 Environmental Cultural Resources and Compliance, answers can be seen in [blue](#).

(1) Will the 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 impact to surrounding environment will be little to negligible during the installation of the AMR systems. GFTWD will take all steps necessary to minimize any air, water or animal habitat during installation of the remote read meters.

(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?

Within the project area there are four listed species that are threatened or endangered. These species are the Northern Long-Eared Bat, the Whooping Crane, the Gray Wolf, and the Sprague's Pipit. Although there are listed endangered species in the project area, none will be affected with the implementation of the proposed project since AMR system installations will take place within residences, in which none of these endangered species will reside.

(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.

Yes, but the project will have no impact upon the waters of the United States because all meters will be installed within residential homes.

(4) When was the water delivery system constructed?

The water system was constructed between the early 1970's-now, as the system is undergoing additional construction in 2017.

(5) Will the project result in any modification 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 modifications will be made to irrigations systems.

(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 buildings or structures from the National Register of Historic places will be affected.

(7) Are there any known archeological sites in the proposed project area?

There are no known archeological sites in the proposed project area which would be affected.

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

The project will have a positive impact on low income and minority populations by potentially saving them money. The new meters will help to find water leaks within the residences plumbing which will decrease their overall water use bill each month. New AMR systems will also help to cut system losses. A decrease in system losses means lower monthly billing prices.

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

The project will not limit access to ceremonial sacred sites and will not have impacts upon any tribal lands.

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

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

## **6.0 REQUIRED PERMITS OR APPROVALS**

No permits are required.

## **7.0 OFFICIAL RESOLUTION**

See Appendix A

## **8.0 PROJECT BUDGET**

### **8.1 Letters of Commitment**

GFTWD will utilize their reserve funds for their cost share portion of the project.

### **8.2 Funding Plan**

#### **8.2.1 Question Breakdown**

1. How will you make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant (e.g., reserve account, tax revenue, and/or assessments)

GFTWD will both use monetary and in-kind work contributions to the project. The monetary contributions will use reserve funds to pay for all project expenses incurred

during the project in order to meet grant cost share percentages. The in-kind work will include the installation of all AMR systems in user's homes.

2. Describe any costs incurred before the anticipated Project start date that you seek to include as project costs. For each cost, identify:

(a) The Project expenditure and amount:

It is anticipated that the cost incurred prior to the project will be \$6,000 for the WaterSMART Grant Report.

(b) Whether the expenditure is or will be in the form of in-kind services or donations

The cost incurred for the report will be incurred by GFTWD financially.

(c) The date of cost incurrence:

March 2017.

(d) How they benefitted the project:

The WaterSMART Grant benefited the project, by quantifying the cost of the project, providing the potential savings, as well as outlining a plan for GFTWD to systematically install the AMR meters to successfully minimize system water loss.

3. Describe any funding requested or received from other Federal partners.

No other federal funds will be used during the WaterSMART project.

4. Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

At this time, there is no pending funding.

Table 8.1 below breaks down a summary of the non-federal and other federal funding sources. Please note that in-kind contributions are denoted with an asterisk (\*)

| Funding Sources                       | Funding Amount       |
|---------------------------------------|----------------------|
| <b>Non-Federal Entities</b>           |                      |
| Grand Forks Traill Water District*    | \$ 49,999.78         |
| Grand Forks Traill Water District     | \$ 24,960.00         |
| <b>Non-Federal subtotal:</b>          | <b>\$ 74,959.78</b>  |
| <b>Other Federal entities</b>         |                      |
|                                       |                      |
| <i>Other Federal Subtotal:</i>        | \$ 0                 |
|                                       |                      |
| <b>Requested Reclamation Funding:</b> | <b>\$ 74,655.00</b>  |
| <b>Total Project Funding:</b>         | <b>\$ 149,614.78</b> |

**Table 8.1 – Summary of non-Federal and Federal funding source**

#### 8.4.2 Fringe Benefits

Currently, the manager, the operators, and the administrative assistant receive fringe benefits. Fringe Benefits are approximately \$10.70 an hour for all employees.

#### 8.4.3 Travel

It is anticipated that each meter will take 20-miles of travel. A federal rate of \$.54/mile was used to calculate the estimated cost of travel. GFTWD vehicles will be used for all travel purposes.

#### 8.4.4 Equipment

All equipment used under the project is under \$5,000 in value and are comprised of small hand tools.

#### 8.4.5 Materials and Supplies

The primary materials will be the AMR Meters and SmartPoint heads. GFTWD worked with Dakota Supply Group to obtain the costs for the AMR Meters and SmartPoint heads.

#### 8.4.6 Contractual

GFTWD hired AE2S to compile a report for the WaterSMART grant and to better quantify their needs. The report is a pre project cost and is anticipated to be paid for by GFTWD.

#### 8.4.7 Environmental and Regulatory Compliance Costs

It is anticipated that there will be no environmental and regulatory costs due to the fact that the all of the project will be installed in residences. There was no percentage of the project cost budgeted for Environmental and Regulatory Compliance because this is a non-construction project with no ground disturbance anticipated.

#### 8.4.8 In-Direct Costs

With the inability to forecast in-direct costs, 10% of GFTWD direct share cost was used as a place holder for in-direct costs.

#### 8.4.9 Total Costs

Total project cost can be found in Table 8.2.

### **8.5 Budget Form**

See Appendix B for Budget Forms SF-424, SF-424A, and SF-424B.

**APPENDIX A – OFFICAL RESOLUTION**

**OFFICIAL RESOLUTION OF THE GRAND FORKS TRAILL WATER  
DISTRICT REGARDING PARTICIPATION IN FUNDING FOR A  
BUREAU OF RECLAMATION WaterSMART GRANT PROJECT.**

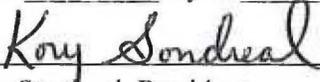
A. WHEREAS, the United States Department of the Interior, Bureau of Reclamation, under its WaterSMART Grant Program, has made available to qualifying applicants grant funding on a matching fund or challenge grant basis funds for water conservation and management projects: and

B. WHEREAS, Grand Forks Trill Water District has identified a project that exemplifies the objectives of the WaterSMART grant program in its Advanced Metering Structure Program;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of Grand Forks Trill 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 WaterSMART Grant under the Fiscal Year 2017, 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 5<sup>th</sup> day of April 2017.

  
\_\_\_\_\_  
Kory Sondreal, President

Attest:

  
\_\_\_\_\_  
Neil Breidenbach, Manager

**APPENDIX B – BUDGET FORMS**