City of Wilmer

WILMER: SMART METER CONVERSION AND SCADA SYSTEM IMPLEMENTATION PROJECT

WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Years 2020 and 2021

U.S. Department of the Interior: Bureau of Reclamation Policy and Administration
Funding Opportunity Announcement No. BOR-DO-20-F001

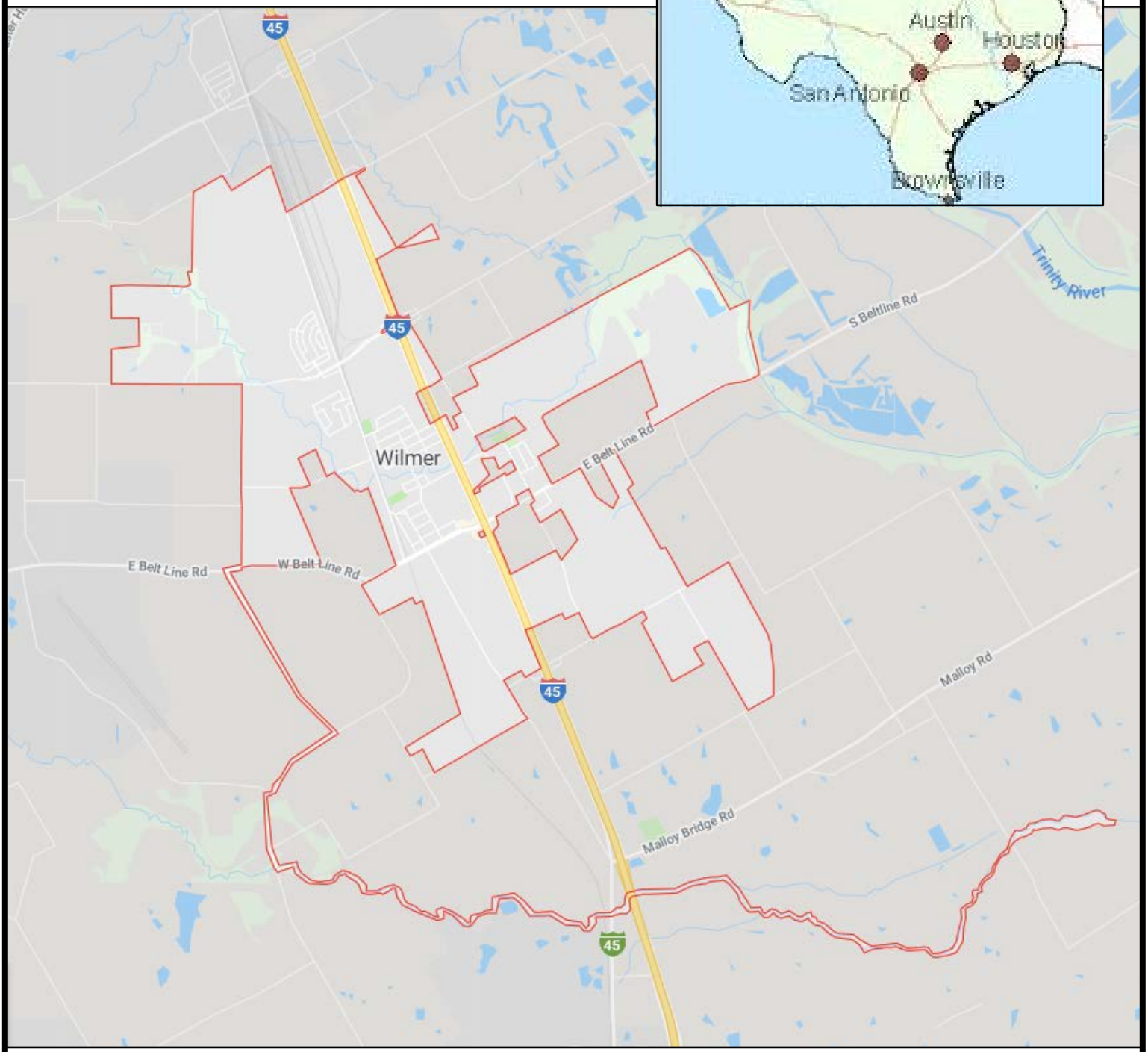
October 3, 2019

APPLICANT:
City of Wilmer
128 N Dallas Ave
Wilmer, TX 75172

PROJECT MANAGER:
Missie Schwab, Assistant City Administrator
Phone: (972) 441-6373
Email: mschwab@cityofwilmer.net

PREPARED FOR:
Bureau of Reclamation
Financial Assistance Support Section
Attn: Ms. Janeen Koza
P.O. Box 25007, MS 84-27814
Denver, CO 80225
Phone: (303) 445-3446

Project Location Map



City of Wilmer

Smart Meter Conversion and SCADA System Implementation Project

TABLE OF CONTENTS

City of Wilmer

Bureau of Reclamation
Water and Energy Efficiency Grant
Wilmer: Smart Meter Conversion and SCADA System Implementation Project

EXECUTIVE SUMMARY

Date: October 3, 2019
Applicant Name: City of Wilmer
City: Wilmer
County: Dallas County
State: Texas

Project Summary. In an effort increase efficiency and improve operations, the City of Wilmer (population 4,136) requests $198,802 from the Bureau of Reclamation (BOR) for a $497,006 project to retrofit 1,152 water meters to smart meters by installing advanced metering infrastructure (AMI) that will provide wireless communication between the meter and Public Works personnel. In addition, telemetry (SCADA) equipment will be installed to further enhance the City's infrastructure to monitor the City's potable water supply for quicker leak/overflow detection at the City's water storage tower and five lift stations. The new AMI technology will allow the billing department and meter readers to automatically collect consumption, diagnostic, and status data from each water meter, transferring that data to a central database for billing, troubleshooting, and analyzing in a fraction of the time it currently takes. The AMI system will be comprised of state-of-the-art electronic/digital hardware and software to combine data measurements with remote communications. This system will enable measurement of detailed, time-based information and frequent collection of information allowing for quicker leak detection. Overall, the project will modernize the City's infrastructure, provide more accurate and detailed leak and billing data, and will save an estimated 53 acre-feet per year (AFY) of potable water. The conserved water will remain in local reservoirs. The proposed project aligns with FOA goals and the Department of Interior's priority to modernize American infrastructure, and represents the City's ultimate goal to increase efficiency and improve operations. The median household income (MHI) for the City is $40,970, far below 80% of the State's MHI of $57,6051, classifying the City as low-income.[1] The project will take 12 months to complete, and is not located on a federal facility. It is also important to note that the City was recently victim to a cyber-attack in August 2019, destroying many of the City's records. The City is making the best effort in good faith to provide information for this grant. And the cyber-attack has been documented, and an article can be found at https://statescoop.com/texas-ransomware-attack-nine-named-feds-respond/.
The existing meters are an average of 20+ years old and require our staff to physically inspect each of the 1,152 meters onsite and visually perform a meter-read. Currently, meters are manually read every 30 days, which provides only the total water consumption since the previous read. There is no way to determine daily patterns of water use or quickly determine if

[1] Based on U.S. Census Bureau data from the 2013-2017 American Community Survey 5-Year Estimates and the state income limits.

leaks are present with the current system and data. Leaks could go unnoticed for months or even years at a time before being identified. The new meters will modernize our current process and provide more accurate and consistent readings. With this new system and SCADA equipment monitoring potable water at the water storage tower and lift stations, allowing for a comparison in metered consumption, leaks will be detected and remediated quicker. The quantifiable result is sustained water savings that support broader water reliability benefits such as conservation of the region's water supply.

BACKGROUND DATA

Project Location (including map). The City of Wilmer is a small community of 4,136 people located in Dallas County, but is experiencing growth. The Wilmer Economic Development Corporation reported a 5.1% population growth between 2010 and 2015 and projected an 8.1% growth between 2015 and 2020. This is due in part to Wilmer's Primary Trade Area (PTA), which encompasses the Interstate 45 (I-45) corridor from I-20 to the north, and the City of Palmer to the south. This area includes portions of Lancaster, Ferris, and southern Dallas. The City of Wilmer offers easy access to all regional Interstates (I-45, I-20, I-30), U.S. Highways, and both international and general aviation airports (Lancaster, DFW International, Love Field), making it a popular choice as a distribution center for many businesses including Procter & Gamble, Amazon, Unilever, Whirlpool, and many more. According to American Fact Finder, 27.5% of the City's population lives below the poverty level, which is 71.9% higher than the State of Texas (16%). The City, through its Public Works Department, provides municipal water to its service area, which includes the area within the City's boundary as well as some unincorporated areas of Dallas County. The City of Wilmer's Water Service Area comprises approximately 3,540 acres. Please see location map on page i of the application.

Source of Water Supply. The City of Wilmer purchases 100 percent of its potable water from the City of Hutchins via Dallas Water Utilities (DWU). Prior to 2010, Wilmer's primary water source was groundwater pumped from two wells in the city. However, the wells began to fail and were abandoned; Wilmer now purchases DWU water wholesale from Hutchins.

Currently, 100 percent of the City's potable water system is supplied by surface water from six reservoirs – Lewisville, Grapevine, Ray Hubbard, Tawakoni, Ray Roberts, and Fork. Of the six reservoirs, DWU only owns and operates Lake Ray Hubbard. Additionally, DWU has water in in Lake Palestine, approximately 90 miles southeast of Dallas. Lake Palestine is currently in the process of being connected to DWU's system, with an anticipated connection date of 2027.

Wilmer's average annual water supply between 2017 and 2018 was 339 AFY (110,448,440 gallons), which equates to an Average Day Demand (ADD) of approximately one million gallons per day (MGD). The average maximum month demand (MMD) for this same time period was

750,000 MGD, while the maximum day demand (MDD) was calculated to be approximately 950,000 MGD.

Water Rights Involved/DWU Water Rights.

Western System: The reservoirs in the western system in which DWU holds water rights include Ray Roberts Lake, Lewisville Lake, Grapevine Lake, and the Elm Fork Channel of the Trinity River (above Frazier Dam). DWU also holds water rights for uncontrolled portions of the Elm Fork of the Trinity River watershed (i.e., areas located downstream of Lewisville Lake and Grapevine Lake which contribute stream flow to DWU's water supply diversion points on the Elm Fork).

Additionally, DWU holds water rights in Lake Palestine, but this reservoir is not presently connected to the DWU Water System. Lake Palestine, which is physically located southeast of Dallas, will be connected to the Western System through the Bachman WTP. This connection is scheduled for 2027.

Eastern System: The reservoirs in the eastern system in which DWU holds water rights and/or supply contracts include Lake Ray Hubbard, Lake Tawakoni, Lake Fork, and Lake Palestine (unconnected). In addition, DWU treats raw water from Lake Jim Chapman for the City of Irving and delivers treated water to the City of Irving.

Other Rights: DWU holds storage and diversion rights for White Rock Lake, located on White Rock Creek, in northeastern Dallas. The City of Dallas also has permitted reuse of return flows from the City of Lewisville Wastewater Treatment Plant (WWTP) and Town of Flower Mound WWTP in the Elm Fork of the Trinity River and from Dallas' Southside and Central WWTPs in the Trinity River.

Current Water Uses. The City of Wilmer categorizes its water users into the following categories: Residential, Commercial, Industrial, and institutional. Public water uses include fire protection and construction use.The water categories by percentage of use are listed in Table 1 below.

TABLE 1
WATER CATEGORIES – PERCENTAGE OF USE

Residential	Commercial	Industrial	Institutional
90.94%	0.56%	8.39%	0.09%

Residential: Residential users includes single and multi-family residences, condominiums, apartments, and mobile homes. Water use in this sector typically includes indoor uses (e.g., bathing, laundry, drinking, cooking, and sanitation) and outdoor uses (e.g., irrigation, car washing, and swimming pools). The residential sector is expected to expand with the new industry moving into the area daily (see "industrial" section below).

Commercial: Commercial users range from restaurants, offices, gas stations, and shopping centers to other facilities serving the local population and visitors. The City's commercial sector is expected to grow to accommodate growth in the City's residential sector.

Industrial: The City's industrial sector is growing astronomically. In 2005, Union Pacific Railroad opened a facility straddling the cities of Wilmer and Hutchins. Currently, a local developer is developing almost 4,000 acres of industrial land in the I-45 corridor near Union Pacific Railways' intermodal shipping terminal. The area now known as the International Inland Port of Dallas is 7,500 acres south of I-20 and between interstates 45 and 35, spanning portions of Dallas County and the cities of Dallas, Lancaster, Ferris, and DeSoto, and encompassing all of Hutchins and Wilmer. As stated above, The Wilmer Economic Development Corporation reported a 5.1% population growth between 2010 and 2015 and is projecting an 8.1% growth between 2015 and 2020. The City's close proximity to regional interstates, the Union Pacific Intermodal Terminal, and both international and general aviation airports, make Wilmer a popular choice as a distribution center for many businesses including Procter & Gamble, Amazon, Unilever, Whirlpool, and many more. The industrial sector is expected to continue expanding for decades to come.

Institutional: Institutional users include governmental institutions (e.g., City Hall), fire and police facilities, railroads, schools, courthouse, library, and interstate highways. In addition, the City has a 600-student elementary school opening in August 2020 and a middle school scheduled for 2023. The institutional sector is expected to expand as the City's population grows.

Number of Water Users Served. The City operates a single public water system which currently serves a population of 4,136 people through approximately 1,859 water service connections.

The demographic breakdown of the City of Wilmer is as follows: White (47.89 percent), Black (23.43 percent), American Indian and Native Alaskan (1.12 percent), Asian (0.06 percent), Other (24.55 percent), Two or More Races (2.95 percent), and Hispanic or Latino of any race (41.50 percent). 27.5 percent of the population live below the poverty level.

Current and Projected Water Demand. Based on development currently proposed within the City's water service area (4,136 people), the population is estimated to grow to between 20,000 and 25,000 people and approximately 9,000 new dwelling units are anticipated to be added to

the City's service area by 2030. The anticipated population growth will require added residential water meters in the future regardless of new developments. As stated above, the City's current meters are on average over 20 years old and have been installed piece-meal over the years with multiple makes and models of meters. The proposed project will upgrade all meters in the City to Master Meter BLMJ radio-read meters and will lay the groundwork for future connections to seamlessly integrate into a modern AMI system.

Table 2 highlights the anticipated growth.

TABLE 2
PROJECTED POPULATION AND DEMAND

	2017	2035	2060
Population within the City's Water Service Area	4,136	10,690	22,000

Water Demand. It is estimated that the City's population will grow to a total of 22,000 at build-out. Current water demand is one million gallons per day. Projected demand in 2060 is anticipated to be 4.5 million gallons per day, an increase of 450% of today's demand.

Table 3 below from the NCTCOG 2016 Water Plan represents member cities and agencies' current and projected water demands.

Municipality	2010 Demand (mgd)		2035 Demand (mgd)			2060 Demand (mgd)	
	AADD	MDD	AADD	MDD	PHD	AADD	MDD
Dallas Co.	0.00	0.00	1.10	2.70	NA	1.50	3.80
Ferris	0.32	0.96	2.90	7.30	15.00	4.00	10.00
Hutchins	1.00	2.20	3.20	8.00	16.00	3.90	9.90
Lancaster	4.20	9.10	12.4	31.0	62.00	16.3	40.7
Wilmer	0.38	0.61	1.60	4.10	8.20	3.40	8.40
Totals	5.90	13.00	21.20	53.10	106.20	29.1	72.8

* NA: Data Not Available, gpcd = gallons per capita per day, MDD = Maximum Day Demand, AADD = Average Annual Daily Demands

**Peak hour demands are only needed to determine distribution infrastructure. Distribution infrastructure is assumed to serve only incorporated areas.

Source: 2010 – Data provided by each city, 2012

The State of Texas' water demand is projected to increase by 22 percent as the State's population is projected to increase from its current 25 million to 46 million in the next 50 years. The Texas Water Development Board (TWDB) has estimated that 24 percent of the future

water supply should come from municipal and agricultural conservation projects. Wilmer's proposed project specifically helps meet the State's objectives.

Potential Shortfalls in Supply. The City of Wilmer, like most of Texas, experiences severe drought frequently, thus the potential for water shortfalls is ever-present. Additionally, our Region's explosive population growth and projected growth put more stress on potable water supplies. According to the U. S. Drought Monitor, "since 2000, the longest duration of drought (D1-D4) in Texas lasted 271 weeks beginning on May 4, 2010 and ending on July 7, 2015. The most intense period of drought occurred the week of October 4, 2011 where D4 affected 87.99% of Texas land." Before that, the North Texas region entered into a drought that lasted from 2005 to 2007. Due to the probability of another multiyear drought, DWU implemented a Water Conservation Plan and a Drought Contingency Plan. The City of Wilmer is currently in draft form of its planned drought contingency plan and is using DWU's planning documents as a guide. The water conservation sections of DWU's plans include measures that are intended to result in ongoing, long-term water savings. The Plans discuss water conservation methods including metering, control of unaccounted water, leak detection and repair, public education, and various other water conservation measures.

Water Delivery System. The entire City of Wilmer's potable water is supplied from surface water from six reservoirs via DWU.

The City's water delivery system, which was built in 1913, consists of 2,000 miles of pipeline, one water storage tower, one booster pumping station, and five lift stations. In addition, the City has a second water storage tower coming on line later this year.

All wastewater flows collected within the City's service area are currently treated at one facility located in the City of Dallas, owned and operated by Dallas Water Utilities.

HYDROPOWER AND ENERGY EFFICIENCY

Energy Efficiency. This project will conserve water by replacing outdated water meters with smart meters and improve energy efficiency with AMI by enabling communication over a fixed network between the utility system and metering endpoints requiring less staff and less vehicles to manually read meters. In addition to smart meters, the City will install SCADA system monitors to the City's water storage tower and five lifts stations to monitor potable water levels, pressure, and pump and/or electrical failures alerting of potential overflows. With this approach, the City will identify, locate, and repair all leaks over time.

The project will improve energy efficiency by reducing water loss - less energy will be expended by decreasing the need to import water, utilized by the City of Wilmer, from the City of Hutchins, the City of Dallas, and ultimately regional reservoirs.

The project does not include a hydropower component.

Past Working Relationship with the Reclamation.

We currently do not have a BOR facility or contract/agreement within our jurisdiction. This grant request would be our first work with the BOR. In addition, we have reached out to and spoken with BOR staff to learn more about how to be competitive for funding. We hope that this application will be viewed favorably by the BOR and thus start the relationship-building.

TECHNICAL PROJECT DESCRIPTION

The proposed project will update 1,152 water meters in the City of Wilmer to smart meters, install AMI to provide wireless communication between the meter and utility personnel, and install a SCADA system with monitors at the City's water storage tower and five lift stations. See Appendix C for vendor materials for the proposed AMI and SCADA systems.

The average age of existing meters is approximately 20+ years old. The City currently employs two full-time Water and Sewer Staff that physically inspect and read each of the individual water meters by driving to the service address, getting out of their vehicle, and walking to the meter to take the read. The smart meters will enable drive-by instant readings requiring less staff and vehicle time and more accurate accounting. By comparing with flow and pressure data obtained from the SCADA sensors at the water tower and lift stations, the City will be able to pinpoint potential leaks on both the distribution and residential sides of the meter. The current meters only provide a static read of the amount of water that was used since the last read, generally 30 days prior. There is no indication of daily use or patterns, or unusual spikes in water flow. For example, on September 16, an unexpected overflow at the City's Southport pump station occurred that could have been avoided if the City was currently using SCADA monitoring equipment and would have saved approximately 500,000 gallons of water from being lost. The current sensors at the Southpoint pump station failed overnight, and the station is located in a remote area of the City, thus no one was alerted to the overflow until the morning. This is not the first time an incident of this nature has occurred. Over the past six months, five overflows (two at the Southport pump station and three at the Swango pump station) have occurred wasting **approximately 1.6 million** gallons of water that would have remained in local reservoirs.

Exhibit 1: BLMJ Master Meter

The AMI system will be comprised of state-of-the-art electronic/digital hardware and software to combine data measurements with remote communications. The new AMI system, which includes high/low/no usage tampering, and leak detection monitoring, will enable measurement of detailed, time-based information and frequent collection of information allowing for quicker leak detection. The project will modernize the City's infrastructure by providing more accurate and detailed leak and billing data and will save an estimated 53 acre-feet per year (AFY) of potable water.

In preparation of the proposed project, City staff spoke with similar cities that upgraded their meters to smart meters as proposed in this application. Staff received favorable reports of increased leak detection, little to no issues with the equipment, and gathered information about the most efficient way to install a large number of meters to an entire service area.

The proposed project will begin within 90 days of the BOR grant award notification and will be completed within 12 months. The City will choose the selected vendors and contractors through a formal bid process, who will manage the purchase, delivery, installation, integration and final testing of the AMI system and installation of the SCADA system equipment, with oversight from the City's Public Works Director, Mr. Eric Moss, who will serve as the project manager.

The proposed project includes the following tasks:

Task 1. Project Grant Administration

Wilmer staff will provide administrative oversight for the project. Activities will include reviewing and executing the grant agreement and contract, preparing for and attending meetings with the Bureau of Reclamation (BOR), maintaining all grant and project files, preparing and processing requests for reimbursements and fully completed form SF-425 federal financial reports semi-annually and with the final report, preparing updates for the City Council, ensuring grant compliance, completing and submitting semi-annual interim performance reports (to include accomplishments and milestones met and the status of the schedule and timeline) and a final performance report (to include a summary of the objectives met, benefits achieved, long-term resiliency from project, collaboration among partners, and photos), coordinating any audit requests or examination of records by BOR or independent auditors, and maintaining all records for at least three years after the project is closed out.

Deliverables include the executed grant agreement, meeting agendas and minutes, requests for reimbursement, completed SF-425 reports, interim performance reports, final performance report; and audit report (if applicable).

Task 2. Finalize Agreement with Vendor

Vendors will be selected through a formal bid process. They will be responsible for making periodic deliveries, troubleshooting faulty equipment and replacing, at no additional cost, any components that are found to be defective. The City has adequate staff to provide the labor for the meter replacements and installation of the AMI system. The team will hold a kick-off meeting with the selected vendors to review the schedule (and make refinements, if necessary), the cost estimate, and expectations for the 12-month project.

Deliverables include final agreement documents with Vendor, project schedule including key milestones, notes from Kick-Off Meeting, and refined, final cost estimate.

Task 3. Easement(s)/R.O.W

No easements or R.O.W. are anticipated for the installation of new smart meters and the AMI and SCADA systems. For the AMI system, water meter boxes will remain at their existing locations. The SCADA system will be installed at the existing City Hall and SCADA monitors will be installed at existing lift stations and the City's water storage tower.

Task 4. Environmental Documentation

The City anticipates that the project will be considered a National Environmental Policy Act (NEPA) Categorical Exclusion, according to the list of Categorical Exclusions located in the Code of Federal Regulations for the Department of Interior. The project meets the following Categorical Exclusion definitions: "minor construction activities associated with authorized projects which...merely augment or supplement..." and "maintenance, rehabilitation, and replacement of existing facilities which may involve a minor change in size, location, and/or operation."

Environmental documentation will be filed after the grant is executed and the contract is awarded.

Deliverables include *a*pproved and adopted NEPA documentation (Categorical Exclusion, BOR to confirm).

Task 5. Permitting

No permits are expected for the installation of the AMI and SCADA system.

Task 6. Public Outreach

City of Wilmer project staff will continue efforts to alert the 1,859 customers of the system upgrade for all SCADA and AMI systems. The City will provide education regarding the logistics

and benefits of installation and the new systems. Future outreach will include door tags, flyers, and community Facebook and City website postings.

Deliverables include copies of customer outreach materials.

Task 7. Install AMI Systems

The installation contractor will be selected through a formal bid process. They will be responsible for installing 1,152 Radio Read Master Meter Bottom Load Multi-Jet (BLMJ) meters of varying size (0.75-inch through 1-inch) and reconfiguring the meters to capture hourly data with 3G Tech.net software Infrastructure (AMI) technology. Each meter site will be examined and determined if digging is required due to meter burial. For each meter, the contractor will remove the old meter and install the new smart meters. Although labor intensive, the City is opting to complete automating meter reading and SCADA system potable water system monitoring simultaneously, saving time, staff resources, and most importantly, water.

Staff anticipates that installation will be accomplished over a one-year period by the chosen General Contractor.

Deliverables include installation schedule, meter installation inspection checklist, and contractor invoices.

Task 7.1. Test and Launch AMI System

The General Contractor and his vendor will ensure that the new AMI system will be integrated with the City's billing system to allow customers to view periodic flow rates, total water consumed each month, and total consumption over a billing cycle. The vendor will install a software system for the AMI system analytics and fully test the system upon completion of each phase of the installation. AMI automated installation will be integrated into the City's existing water management system, and will include hourly meter data monitoring, leak sensor detection, and IT support for any troubleshooting. The system will eliminate any information needing to be captured manually, by using a 3G Mobile Laptop Reading System drive-by scanner. A backup process allowing all information to be preserved in the event of a breakdown will be included in the system. Computers/handhelds shall be used for efficient meter exchanges to track, collect, and report information relating to the Water and Sewer Staff. A data file will be created for each meter providing an account number, meter reading route number, meter size, make and serial number, and meter location (GPS coordinates), access notes to the meter, and the name and phone number listed on the account. The system will need minimal manipulation during the grant-funded phases of installation.

The GPS laptop receiver will be able to relay meter data/alarms provided by new meters to Public Works staff. These data/alarms will include: Low flow; High Flow; Meter Low Battery; Meter Tampering; Reverse Flow; and Zero Consumption.

Deliverables include IT Support, installation of account data, vendor invoices, and system handbooks.

Task 7.2. Train Staff

The vendor will provide an extensive onsite training to City staff, to include operation and maintenance of the meter units, overview and operation of the software management system and data collection capabilities, and training on developing and analyzing reports.

Deliverables include *v*endor invoices, training agenda and participant list, photographs of the installed meters, and installation completion report.

Task 7.3. SCADA System Installation

Installation, integration, and programming of the SCADA system equipment, HMI development, testing, and start-up will be performed by Dedicated Controls LLC personnel at the City's water storage tower, five lift stations, and City Hall. The telemetry (SCADA) panel (fully assembled local control panel, 24"x24"x8" enclosure, and MDS Transnet License Free Radio), Allen Bradley Micrologix PLC, and Sensaphone 1800 Alarm Dialer will be installed at City Hall, and the monitoring control panels will be installed at the water storage tower and five lift stations to communicate monitoring data to the City Hall control panel. Monitoring control panels located at the water tower and lift stations will include a control panel, Allen Bradley Micrologix PLC, AI module, antenna, polyphaser, and connections as needed for wireless radio communications, two (2) WIC Steel Flush Valves, two (2) pressure transducers, a temperature transducer, and conduit and wiring as required. The SCADA monitoring system will be integrated into the City's existing water management system, and will include hourly data monitoring to include, potable water flow, pressure, levels, pump failure, and electrical failure that could cause an overflow, leak, or other water loss. The system will utilize an automated process that will eliminate any information needing to be captured manually. The SCADA system will include monitoring devices at the City's water storage tower and five lift stations. The system will auto-dial up to eight City Staff by phone if any monitoring sensors are detected.

Deliverables include installation Schedule and vendor invoices.

EVALUATION CRITERION A: QUANTIFIABLE WATER SAVINGS (30 POINTS)

Amount of Water Saved and Current Losses

The estimated amount of water expected to be conserved as a direct result of this project is 53 acre-feet per year (AFY).

Please see responses to questions, below, for details regarding quantification methodology, estimated water losses, and support for these conclusions.

Municipal Metering.

a. **How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.**

The estimated annual water savings was calculated using the City's annual water usage data and Environmental Protection Agency (EPA) assumptions and data. Please see below.

The City quantified potable savings in the following manner: **First, the City determined annual, real water loss.** The City utilizes annual water usage data to evaluate the effectiveness of metering and meter reading systems, as well as billing, accounting, and loss control programs. The City's latest annual water usage data shows an annual water loss of 18.4 AFY (6 million gallons) in 2018 – an average of 14 gallons per service connection per day of water loss. This number is determined by subtracting the amount of water authorized for consumption (1918 AFY/625 million gallons) from the amount of actual water supplied (1936 AFY/631 million gallons).

1936 AFY – 1918 AFY = 18 AFY TOTAL LOSS

This is the amount of water lost to water leaks on the utility side of the meter – overflows at the City's water storage tower and lift stations, and leaks at the meter that do not register consumption. This water seeps back into the ground, and is water that the City has paid for, but is not reimbursed for. It is called nonrevenue water. All these water loss/nonrevenue water causes can be curbed with the proposed meter and SCADA system upgrades.

Second, we estimated the amount of savings from the proposed project in two ways.

Methodology 1 (Distribution System Losses): We reviewed current Environmental Protection Agency (EPA) literature and studies that show net savings when updating traditional meter systems without leak detection sensors to smart meters. According to the EPA Water Audits and Water Loss Control for Public Water Systems report "Average water loss in systems is 16

percent – up to 75 percent of that is recoverable" (Thornton, J., Sturm, R., Kunkel, G., Water Loss Control Manual (2nd Edition), McGraw-Hill, 2008).

We used the above statement to determine water savings:

1) The proposed project is to upgrade 1,152 meters, and install a new AMI system, along with a SCADA system to monitor the potable water supply status at the City's water storage tower and lift stations.
2) Based on the EPA's statement that up to 75% of system water loss is recoverable, we conservatively anticipate a 50% reduction in our real water loss number (50% of 18 AFY = 9 AFY in savings) due to quicker leak detection, thus allowing staff to identify leaks in a matter of hours or days versus months or years. This will ultimately reduce water losses.
3) **Methodology 1 Total Estimated Water Savings: 9 AFY**

The proposed project will allow this water to remain in regional surface water reservoirs. It will not need to be pumped to customers as leaks will be identified and repaired quickly. Currently on the distribution side of the meter, we can only respond to visible leaks that may have been present for months or even years. The proposed project will allow us to detect leaks within a few days rather than months or years.

Methodology 2 (Customer-Side Savings): On the customer side of the meter, we will be able to identify weekly usage, water use spikes and high or continuous flows. Currently, we have no way to tell if a residential meter has had an unusual serge in water flow or usage. The new system will allow staff to see changes in water usage and consumption to address leaks quickly. The AMI system will recognize if there is an increase in consumption that might indicate a leak, leading to faster detection and repair. The EPA's WaterSense website states that the average household's leaks can account for 10,000 gallons of water wasted every year (residential side of the meter). Furthermore, 10% of homes have leaks that waste 90 gallons or more per day (or 32,850 gallons per year).

1) Wilmer plans to retrofit meters for 1,152 homes and install AMI technology and a SCADA system simultaneously.
2) Using the above logic, we can assume that 90% of these 1,152 homes are leaking 10,000 gallons of potable water each year (90% of 1,152 is 1,037 (X) 10,000 gallons per year = 10.4 million gallons per year).
3) We can also assume that 10% of these homes are leaking 32,850 gallons per year (10% of 1,152 is 115 (X) 32,850 gallons per year = 3.8 million gallons per year).
4) Together, this is 14.2 million gallons per year, or 44 acre-feet per year. We believe that the smart meters and AMI technology will allow us to quickly identify leaks and notify customers so they can make repairs and eliminate water loss much quicker than would

occur otherwise.

5) **Methodology 2 Total Estimated Water Savings: 44 AFY**

The two methodologies together account for water loss that can be prevented on both the distribution meter side AND the customer-side of the system, thus we found the project's estimated water savings to be 53 AFY.

9 AFY (Distribution Side) + 44 AFY (Customer Side) = 53 AFY

Total Estimated Water Savings from Project = 53 AFY

b. How have current distribution system losses and/or the potential for reductions in water use by individual users been determined?

Though not quantified, we believe there is potential for reductions in water use by individual users. The new AMI system will provide customers with detailed reports of their water usage in their monthly bills. They will be able to identify patterns of high usage and see exactly where their water is going. We anticipate behaviors such as over-watering landscapes and running taps will be curbed with this more accurate data for the customer.

c. For installing individual water user meters, refer to studies in the region or in the applicant's service area that are relevant to water use patterns and the potential for reducing such use. In the absence of such studies, please explain in detail how expected water use reductions have been estimated and the basis for the estimations.

The U. S. Department of Energy's report, *Advanced Metering Infrastructure and Customer Systems: Results from the Smart Grid Investment Grant (SGIG) Program* shares key results and benefits from the 70 SGIG projects implementing AMI and customer system technologies, and also documents lessons learned on technology installation and implementation strategies. SGIG projects demonstrated that AMI and customer systems can achieve substantial grid impacts and benefits for customers and utilities, including:

- Reduced costs for metering and billing from fewer truck rolls, labor savings, more accurate and timely billing, fewer customer disputes, and improvements in operational efficiencies.
- More customer control over electricity consumption, costs, and bills from greater use of new customer tools (e.g., web portals and smart thermostats) and techniques (e.g., shifting demand to off-peak periods).
- Lower utility capital expenditures and customer bill savings resulting from reduced peak demand and improvements in asset utilization and maintenance.

- Lower outage costs and fewer inconveniences for customers from faster outage restoration and more precise dispatching of repair crews to the locations where they are needed.

Please see below for additional studies of water use systems and water use reductions.

The following case studies reference systems using the same, or similar, advanced meter technology that the City of Wilmer will use for the proposed project to corroborate the anticipated benefits and reduction of water loss. Below are summaries of the case studies with longer excerpts provided in Appendix C.

Baytown, Texas Case Study

Study Excerpt: With most reads for Baytown's approximately 23,000 services handled by mobile collection, reading time dropped to just two or three days, freeing up time and personnel to get back to crucial maintenance, optimizing work flows. Coupled with the consumption activity history, the City can run exception reports to verify readings and check for leaks.

City of North Bovia, Texas Case Study

Study Excerpt: Director of Public Works Cesar Marquez said, "We were using logbooks to read different routes of the City, with two guys per book. We'd go meter by meter, open the lid, and one would call out the reading while the other wrote it down with a pencil. That led to a lot of mistakes." Just to collect the reads, it took six personnel two days. As Bovina progressed through the meter changeout, it realized the extent of its old system's problems. "There were small leaks everywhere," said Marquez. "For every five meters we changed, at least one was leaking, both on our side and on the customer side."

City of North Miami Beach, Florida Case Study

Study Excerpt: The City of North Miami Beach relied on traditional walk-up, manual meter reading, and a leak detection service that visited quarterly to survey areas of its distribution system. Leveraging AMI technology, the City completed installation of 38,000 communication modules along with 11,000 acoustic leak sensors in 2015. The new system provides North Miami Beach with real-time data on customer usage and potential leaks throughout the system, and is best suited to the City's long-term strategy to expand services beyond metering to surveying their distribution system for leaks on a daily basis.

d. If installing distribution main meters will result in conserved water, please provide support for this determination (including, but not limited to leakage studies, previous leakage reduction projects, etc.). Please provide details underlying any assumptions being made in support of water savings estimates (e.g., how leakage will be reduced once identified with improved meter data).

Not applicable. The project does not include distribution main meters.

e. What types (manufacturer and model) of devices will be installed and what quantity of each?

Meters:

- 1,100 – 5/8" x ¾" Bottom Load Multi-Jet (BLMJ) 3G-DS Radio Read Master Meter (with reinforced plastic bottom; USG-lead free). Master Meter – Model# B12-A11-A01-0101A-1.
- 52 – 1-inch DS Radio Read BLMJ Master Meter (with lead free body and plastic bottom). Master Meter – Model# B16-A11-A01-0101A-1.

SCADA System Equipment:

Main Control Panel (located at City Hall):

- 1 – Fully assembled Local Control Panel (24" x 24" x 8" enclosure and MDS TransNET License Free Radio). The MDS TransNET utilizes Frequency Hopping Spread Spectrum (FHSS) to provide reliable long-range data transportation at up to 115.2 kbps.
- 1 – Allen Bradley Micrologix Programmable Logic Controller (PLC)
- 1 – Rohn 45G Antenna Tower
- 1 – Sensphone 1800 System. The Sensaphone 1800 system remotely monitors status conditions 24/7 for up to eight locations. When the system identifies a potential problem, it functions as an auto dialer that can immediately alert up to eight people with custom phone calls. The internal rechargeable battery backup provides 24 hours of continuous monitoring and alerts in the event of a power outage.
- 1 – Dell computer package with 40" flatscreen monitor, UPS, and VTSCADA HMI software package.
- Antenna, Polyphaser, coaxial cable, and connectors as required for radio communications.
- Conduit and wiring as needed.

6 – Monitoring Control Panels (located at each of the water tower and five lift stations).

- Control Panel (24"x24"x8" enclosure and MDS TarsNet License Free Radio).
- Allen Bradley Micrologix PLC.
- AI module.
- Antenna, polyphaser, and connections as needed for wireless radio communications.

- 2 – WIC Steel Flush Valves.
- 2 – Pressure transducers.
- Temperature transducer.
- Conduit and wiring as required.

f. How will actual water savings be verified upon completion of the project?

Actual water savings will be verified in the City's annual water usage data each year during the period of performance. We are using the same data points as our baseline for 2018 and will show the water savings at the end of each year with the annual report. On a monthly basis, we will compare consumption for the same month the year before meter conversion.

The City will determine actual water savings by reviewing monthly water usage and status reports across the life of the project. The City will determine usage rates based on AMI data along with water bills, and other features of the software and capabilities to determine the actual amount of water that is used and conserved post-upgrade of the AMI meters. This will provide the City with an accurate accounting of the water savings that can be attributed to the Project.

EVALUATION CRITERION B—WATER SUPPLY RELIABILITY (18 POINTS)

Please provide sufficient explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

- **Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?**

Yes, the proposed project has local and regional support which promotes and encourages local and regional collaboration to achieve Texas's overarching goal to increase the reliability of the State's water supply and provide long-term solutions to the effects of climate change and population growth. Letters of support from the following entities are included in this application in Appendix A:

- Commissioner John Wiley Price – Commissioner of District 3, Dallas County Commissioners Court;
- Mayor Emmanuel Wealthy-Williams;
- City of Hutchins;
- North Central Texas Council of Governments (NCTCOG);
- Dallas Water Utilities; and
- Developer Mark Rader

Commissioner John Wiley Price: As the Commissioner of District 3 of the Dallas County Commissioners Court, Commissioner Price serves the cities of Wilmer, Balch Springs, Cedar Hill, Combine, DeSoto, Duncanville, Ferris, Garland, Glen Heights, Hutchins, Lancaster, Mesquite, Seagoville, and Sunnyvale. Commissioner Price supports water conservation projects that help to ensure sustainability of one of our most precious natural resources. He was instrumental in facilitating the City of Wilmer's installation of the City's new water storage tower.

Mayor Emmanuel Wealthy-Williams: As Mayor of the City of Wilmer, Mayor Wealthy-Williams is a supporter of all Texas municipalities improving sustainable practices that will minimize environmental impacts of its water infrastructure. She recognizes that it is imperative that Northern Texas cities upgrade outdated water systems to improve delivery and sustainability of vital resources that to keep up with the demands of the region's extraordinary growth.

City of Hutchins: Currently, the City of Wilmer purchases imported water from the City of Hutchins via Dallas Water Utilities. The proposed project is expected to save hundreds of acre-feet per year of potable water that can remain in DWU reservoirs. The proposed project will not only benefit the City of Wilmer, but also the City of Hutchins and will contribute to the regional goals of sustaining water supplies for future use.

North Central Texas Council of Governments (NCTCOG): NCTCOG recognizes that the City of Wilmer is growing quickly, and residential and business development continues to surge putting pressure on the City's existing water system. The proposed project aligns with NCTCOG's vision for water and energy efficiency throughout the region. NCTCOG is committed to working closely with member communities and other stakeholders to ensure the stability and availability of precious water resources for our community. NCTCOG will assist the City by providing data relevant to the project area if needed.

Dallas Water Utilities (DWU): DWU provides imported water to local water agencies, including the City of Hutchins, from which the City of Wilmer purchases water. The project is expected to save hundreds of acre-feet per year of potable water that can remain in DWU reservoirs and contribute to goals of sustaining water supplies.

Developer Mark Rader: As president of Prime Rail Interests LLC and a longtime Southern Dallas County developer, Mark Rader has worked with Wilmer and the surrounding areas for many years developing the Sunridge Business Park and the Union Pacific Intermodal Terminal. Wilmer is prime for new industry and business headquarters. Already, the area including Wilmer is being considered the Southern Dallas Inland Port which is rapidly bringing new businesses and residents to the area. The City depends heavily on this new growth and the City's infrastructure must keep up.

The City also educates water service customers on various approaches to conserve water. The City has posted on its website links to several water saving and conservation resources including water saving tips for home and yard and a guide to drought-resistant landscaping.

- **Is there widespread support for the project?**

As mentioned above, there is local and regional support for the proposed project from agencies including Dallas County Commissioner John Wiley Price, the City of Hutchins, NCTCOG, and DWU. There is also public support, as demonstrated by the letter of support provided by area developer Mark Rader. The letters provided support the City's goal to move toward a system that will allow quick identification of leaks at homes and businesses and will supply accurate snapshots of daily data for water usage.

- **What is the significance of the collaboration/support?**

Ultimately, the significance of the City's collaboration with and support from other agencies and inclusion in various water management programs is the dedication of the cities and agencies in Dallas County to work together to conserve and better manage valuable water resources for the future of Texas.

The City of Wilmer must work closely with agencies and cities to properly manage water supplied by the DWU reservoirs to ensure there are ample water resources now and in the future as the State faces the effects of climate change and population growth.

- **Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?**

The proposed project will save 53 AF of water annually that will remain in local surface water reservoirs. The more water that is kept in the reservoirs to provide recharge and storage for future use, the less water the City will have to purchase from the City of Hutchins, enhancing the long-term reliability to water resources.

In addition, Wilmer will share best practices and results of the proposed project with the cities and agencies included in its numerous programs and agreements which will enable project replication in other cities and districts.

- **Will the project make water available to address a specific water reliability concern? Please address:**
  - **Explain and provide detail of the specific issue(s) in the area that is impacting water reliability, such as shortages due to drought, increased demand, or reduced deliveries.**

The impacted area is Wilmer, located in the county of Dallas, Texas, and is a part of the Dallas-Fort Worth Metroplex.

There are two specific water supply sustainability concerns in the region, as mentioned above, in the "Background: Potential Shortfalls in Water Supply" section: drought and population increase:

Drought. As mentioned above, the past and potential drought impacts for North Texas and Wilmer are urgent. According to the U. S. Drought Monitor, "since 2000, the longest duration of drought (D1-D4) in Texas lasted 271 weeks beginning on May 4, 2010 and ending on July 7, 2015. The most intense period of drought occurred the week of October 4, 2011 where D4 affected 87.99% of Texas land." Before that, the north Texas region entered into a drought that lasted from 2005 to 2007.Based on drought patterns, it is estimated that Wilmer will suffer another drought within the next five years. During the most recent drought, local lakes dropped up to 50 percent of their capacity. It is imperative that we continue to seek preventive measures to efficiently use and monitor our water supply to prepare for future drought conditions.

Population Increase and Rising Water Demand. The City is experiencing sustained population growth due to the City's proximity to the Union Pacific Intermodal Terminal and the International Inland Port of Dallas. The City's new elementary school will open in August 2020 and 1,400 new homes will be built by 2022. As growing municipalities in North Texas compete for resources, shortages due to drought may occur and rates for purchasing water will likely increase. Population growth drives up water demand, increasing water prices and the need to develop further water sources to meet basic needs while also increasing ability to manage and store water to meeting rising need during drought. Our continued population increase demands immediate water conservation measures.

Water conservation at the end source will benefit all of the water recipients and suppliers up the chain of delivery, because decreased water demand from the residents of Wilmer means a larger water supply for the rest of North Texas water recipients.

- **Describe where the conserved water will go/how it will be used. Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)? Will it be left in the river system?**

The conserved water will remain in the local surface water reservoirs, allowing a more sustainable local supply. The proposed project will ensure that 53 AFY of local water remains in DWU's reservoirs.

- **Describe how the project will address the water reliability concern?**

The proposed project will address concerns of drought and population increase by allowing the conserved water to go directly to customers, instead of being lost through leakages. As a result of the new AMI meters which provide real-time data reading, 100 percent of the water delivered through this system will be better managed. SCADA and meter monitoring can prevent a small leak from becoming a big leak, which would result in more water being lost and not being conserved for potential shortages. Additionally, the improved meters will ensure that water that is billed for will be managed better both by the customer and the utility. Less unaccounted for water loss represents an increase in City funds and preparation ability.

The SCADA system will monitor the potable water system status at the City's water storage tank and five lift stations. As mentioned above, the City has experienced five system overflows in the past six months, which equates to all overall loss of approximately 4.91 AFY (1.6 million gallons) of potable water. The SCADA system will alert up to eight people by phone that an overflow is eminent allowing City staff to prevent future overflows and conserve water.

- **Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?**

Not applicable. There is not frequent tension or litigation over water in the DWU reservoirs.

- **Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.**

Not applicable. The conserved water will simply remain in DWU surface water reservoirs.

- **Describe the roles of any partners in the process. Please attach any relevant supporting documents.**

As described earlier, and indicated in the application's letters of support, the City of Wilmer has many important relationships and collaborations at the local, regional, and state levels to

enhance conservation of the regional water supply. The City also interviewed local agencies to evaluate the effectiveness of upgrading meters, in addition to reviewing AMI case studies referenced in Appendix C.

- **Indicate the quantity of conserved water that will be used for the intended purpose.**

Conserved water in the amount of 53 AFY will remain in the City's surface water reservoirs for increased sustainability of Wilmer's water supply and water supply of other agencies that share local water reserves.

- **Will the project benefit Indian tribes?**

Not applicable. There are no Indian tribes located within or near Wilmer or who share the same water source reservoirs as Wilmer. The proposed project will benefit all residents of Wilmer.

- **Will the project benefit rural or economically disadvantaged communities?**

Yes. Based on U.S. Census Bureau data from the 2013-2017 American Community Survey 5-Year Estimates, the City of Wilmer is considered low-income/disadvantaged. The City's MHI ($40,970) is less than 80% of the state's MHI of $57,051, identifying it as a disadvantaged community. The project will benefit the entire city (all water meter connections), which is a disadvantaged community.

- **Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance). Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project.**

Though there are no known threatened or endangered species in the project area, the project will help protect water supplies in Ray Roberts Lake/Reservoir – an occasional winter nesting ground for Bald Eagles and a source of surface water for Wilmer. Bald Eagles are no longer listed as threatened or endangered, but they are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

Exhibit 2. Bald Eagles winter at one of DWU's surface water reservoirs, Ray Roberts Lake which supplies water to the City of Wilmer.

- **Will the project address water supply reliability in other ways not described above?**

Yes. The project will be a model for other Dallas County cities, and local and regional water purveyors. The City will publish savings and findings of water conserved to offer additional concrete data for neighboring communities regarding the benefits of AMI technology. Providing this information will inevitably support the move from outdated meters to upgraded smart meters, which will result in more water conserved in the local surface water reservoirs.

EVALUATION CRITERION C—IMPLEMENTING HYDROPOWER (18 POINTS)

Not applicable. The City is not proposing to install new hydropower capacity at this time.

EVALUATION CRITERION D—COMPLEMENTING ON-FARM IRRIGATION IMPROVEMENTS (10 POINTS)

Not Applicable. There is no agriculture water usage currently within the City of Wilmer. The City does not expect other agricultural activities to develop within its water service area.

EVALUATION CRITERION E—DEPARTMENT OF THE INTERIOR PRIORITIES (10 POINTS)

The proposed project aligns with the following Department of the Interior Priorities:

1. **Creating a conservation stewardship legacy second only to Teddy Roosevelt**
   a. **Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment**
   b. **Foster relationships with conservation organizations advocating for balanced stewardship and use of public lands**

Utilizing Science. The project mitigates the effects of climate change challenges for Texas water resources management.

The NCTCOG 2016 Water Plan is the Region's roadmap to protect communities, infrastructure, services, and the natural environment from climate change impacts. Dozens of actions are listed as underway for the Region to prepare for climate change impacts on the water sector. These actions utilize science to identify best practices that span the different areas of the water sector including: (1) surface water and groundwater, (2) drinking and environmental water supplies, (3) wastewater, (4) flood flows and storm water, and (5) recycled water. The actions focus on safeguarding infrastructure and resources by supporting current actions to plan for future actions to address climate change impacts on local and regional water resources.

Several best practices are listed that are reflected in the proposed project. These include diversifying local supplies and increasing water use efficiency. Diversification of local water supplies, water conservation, and water use efficiency will enable Texas to better respond to

changing economic and climatic conditions, while ensuring a reliable water supply for the future. Ultimately, these strategies must be implemented by local and regional water management agencies throughout the State. This project allows the City of Wilmer to be proactive in implementing its own strategy to assist with the greater goal of water conservation while addressing climate change.

Fostering Relationships. Several partners and conservation agencies are lending their support to the City of Wilmer for this project and they include the Dallas County Commissioners Court, NCTCOG, and DWU. All share a goal to conserve water and believe implementing a modernized infrastructure to achieve greater efficiency and effectiveness in delivering water supplies, is critical for the future of Texas. This type of project can save hundreds of thousands of gallons of water by quickly identifying where a leak is located so that steps can be taken to fix the issue.

2. **Utilizing our natural resources**
    a. **Ensure American Energy is available to meet our security and economic needs**

Over the last two decades, the water-energy nexus has gained attention due to local, regional, national, and global concerns regarding energy security, water scarcity, and the impacts of global climate change. For example, the historic 2012-2015 North American Drought impacted electricity generation capacity by restricting surface water withdrawals used for power plant cooling, as well as drastically reducing hydropower resource availability. Situations such as this highlight how water and energy systems are inextricably linked and the potential vulnerabilities this creates.

The energy needed for providing water can be a significant portion of all energy use. Advanced water metering reduces real water loss, thus reduces the need for energy to pump and clean water that will remain in local reservoirs.

3. **Restoring trust with local communities**
    a. **Be a better neighbor with those closest to our resources by improving dialogue and relationships with persons and entities bordering our lands;**

The City is a member of the North Central Texas Council of Governments, which seeks to improve coordination, collaboration, and communication among local, state, and federal governments and water purveyors and other water resource stakeholders in the region to achieve greater efficiency and effectiveness in delivering water supplies. The project aligns with NCTCOG goals that, include improving dialogue and relationships with member cities, and working toward conservation projects that benefit the entire region.

4. **Modernizing our infrastructure**
   a. **Support the White House Public/Private Partnership Initiative to modernize U.S. infrastructure;**
   b. **Prioritize DOI infrastructure needs to highlight:**
      1. **Construction of infrastructure**

As mentioned earlier, the proposed project directly aligns with the Department of Interior's priority to modernize American infrastructure. The existing meters are an average of 20+ years old, and require staff to physically inspect each of the meters onsite and visually perform a meter-read, an expensive and time-consuming process that bears no periodic water use data. The outdated meter infrastructure has allowed leaks to go unnoticed for years. The new meters will modernize the process, allowing for drive-by meter-reading, more accurate and consistent reading, and faster and more reliable identification of system leaks and issues. The smart meters also lay the groundwork for future systems which will provide City of Wilmer customers with access to real-time utility billing information.

EVALUATION CRITERION F—IMPLEMENTATION AND RESULTS (6 POINTS)

Subcriterion F.1— Project Planning

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Please self-certify or provide copies of these plans where appropriate to verify that such a plan is in place.

Provide the following information regarding project planning:

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

The City of Wilmer is a small community with a high poverty rate. Although the distribution business sector has increased the City's tax revenue, the City's annual budget is still rather small and limited. For fiscal year (FY) 2018-2019, the overall City Budget is $5,458,652, and only $623,460 is dedicated to Public Works. This limits the City's ability to address its planning needs. The City of Wilmer is currently developing a draft Drought Contingency Plan which supports the proposed project and identifies strategies for water conservation. In addition, Wilmer uses the planning documents developed by the City of Dallas – Dallas Water Utilities' (DWU) 2016 Water Conservation Five-Tear Work Plan, 2019 Water Conservation Plan, and 2019 Drought Contingency Plan as guidance. Wilmer is also included in the North Central Texas Council of Governments' (NCTCOG) 2016 Water Plan. As mentioned above, the City of Wilmer

was recently the victim of a cyber-attack which resulted in the loss of many of the City's documents and data.

Wilmer 2016 Water Conservation and Drought Contingency Plan: The Plan specifically addresses the stages of drought and the appropriate responses to lessen water usage. In addition, the plan lists other conservation BMPs such as "Intensifying Leak Detection." The proposed project will help meet that goal by implementing smart meters that will detect leaks almost instantaneously, thus saving 53 AFY of potable water.

DWU 2019 Water Conservation Plan and 2016 DWU Water Conservation Five-Year Work Plan: Both of the plans work hand-in-hand to develop water conservation strategies and best management practices (BMP). The Plan and Work Plan state water conservation goals of reducing water loss and waste and reduce seasonal peak demands. The Work Plan specifically lists Customer Meter Accuracy and Meter Exchange as a BMP. Over the past fifteen years, the following processes have been implemented to improve meter accuracy:

- Replacement of any meter older than 15 years
- Replacement of traditional meters with Automated Meter Reading (AMR) / Advanced Metering Infrastructure (AMI) ready meters

As water meters age, their internal mechanisms begin to deteriorate which can lead to lower measurements. An aging meter will likely become an economic liability with potential for revenue losses. A comprehensive meter replacement program not only benefits the water distribution system by creating a more efficient operation, it also allows the city to more fully recover its revenues. Relevant pages from these plans are included in Appendix D.

NCTCOG 2016 Water Plan: According to the Plan, in 2020 about 80 percent of available water in Region C (including the City of Wilmer) will be supplied by surface water, coming from major reservoirs in the region and imported from surrounding regions. In planning for future needs, recommendations have been made by the Region C Water Planning group that will shift the reliance from surface water supplies to more heavily utilize and conservation strategies such as meter and SCADA automation and upgrades. The full plan can be found at the following website:
http://www.regioncwater.org/Documents/index.cfm?Category=Final+2016+Region+C+Water+Plan.

(2) Describe how the project conforms to and meets the goals of any applicable planning efforts, and identify any aspect of the project that implements a feature of an existing water plan(s).

The project conforms to the four plans listed above: Wilmer Draft Drought Contingency Plan, DWU 2019 Water Conservation Plan, DWU 2016 Water Conservation Five-Year Work Plan, and the NCTCOG 2016 Water Plan.

The proposed project aligns perfectly with the DWU Best Management Practices to replace any meter older than 15 years, and replace traditional meters with Automated Meter Reading (AMR) / Advanced Metering Infrastructure (AMI) ready meters. These practices will enable the City to quickly detect water loss from leaks and help monitor water levels across the City's water system alerting to any potential overflows and subsequent loss of water.

Sub-criterion F.2— Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved).

Calendar year 2018 will serve as the baseline to quantify benefits. The City's Public Works Department will collect and analyze data, and provide information for reports to the Project Manager, Mr. Eric Moss, to include in the Interim and Final Performance Reports. The following performance measures will be included:

Water Better Managed. The proposed project will result in 100% of potable water better managed. The entire City's potable water distribution system will be integrated to the new AMI technology and SCADA system, allowing for early leak detection and alerts to possible overflows. As a result, one hundred percent of the water delivered through this system will be better managed.

Real Water Conserved. The City will record the number of sensor alerts from the AMI and SCADA systems received throughout the project period, the number of leaks identified and fixed, and number of overflows avoided to identify the total real water conserved over 2020 and beyond.

Subcriterion F.3— Readiness to Proceed

Implementation Plan/Schedule. Please see the anticipated project schedule below.

Table 4-SCHEDULE

City of Wilmer AMI/SCADA Implementation Schedule						
Task No.	Timeline Major Project Tasks	*2020*				*2021*
		Q1	*Q2*	*Q3*	*Q4*	*Q1*
0	BOR Awards Announced Spring 2020					
1	Project Grant Administration					
2	Finalize Agreement with Vendor					
3	Easements – Not Applicable					
4	Environmental Documentation					
5	Permitting – Not Applicable					
6	Public Outreach					
7	Install AMI and SCADA System					
7.1	Test and Launch AMI and SCADA System					
7.2	Train Staff					
Project Start: Spring 2020 --- Project Completion: Spring 2021 (12 months)						

Permits. The City of Wilmer does not anticipate permits will be required for the Project as all equipment will be installed and attached at current meter sites, and the City's existing water storage tower and lift stations. Should permits be required, the City will be responsible for executing necessary permits if needed. Permits will be issued by the City of Wilmer. The City of Wilmer anticipates that any approvals necessary for the proposed project will be managed efficiently by City Staff.

Engineering/Design Work. No engineering and/or design work has been completed for the project. The project includes only removal and replacement of water meters and installation of SCADA monitoring equipment at existing locations.

New Policies/Administrative Actions. No new policies or administrative actions are required to implement the project.

Environmental Compliance. The City has evaluated the project for NEPA compliance. It is believed that the project is a Categorical Exclusion for NEPA. For NEPA, we reviewed the list of Categorical Exclusions located in the Code of Federal Regulations for the Department of Interior and concluded that the project meets the following categorical exclusion definitions: "minor construction activities associated with authorized projects which...merely augment or supplement..." and "maintenance, rehabilitation, and replacement of existing facilities which may involve a minor change in size, location, and/or operation."

Evaluation Criterion G— Nexus to Reclamation Project Activities (4 Points)

- **Is the proposed project connected to Reclamation project activities? If so, how?**

We currently do not have a Reclamation facility or project within our jurisdiction.

- **Please consider the following:**
  - **Does the applicant receive Reclamation project water?**

The City of Wilmer does not receive Reclamation project water.

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

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

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

No. The project is not located in the same basin as a Reclamation project or activity.

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

No. The project will not contribute water to a basin where a Reclamation project is located.

- **Will the project benefit any tribe(s)?**

No. There are no Federally recognized tribes located in our jurisdiction.

Evaluation Criterion H— Additional Non-Federal Funding (4 points)

Non-Federal Funding ($298,204) / Total Project Cost ($497,006) = **60%**

~End of Technical Proposal Narrative~

PROJECT BUDGET

FUNDING PLAN AND LETTERS OF COMMITMENT

How you will 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)?

The total cost of the proposed project cost is $497,006 and the City of Wilmer respectfully requests $198,802 (40% of the project cost) in BOR funding to complete the project. The City of Wilmer is committing non-federal matching funds in the amount of $298,204 to total 60% of the total project cost. The source of the City's cash cost share is Wilmer City Tax Notes.

Describe any donations or in-kind costs incurred before the anticipated Project start date that you seek to include as project costs.

The City of Wilmer will not include any donations or in-kind costs incurred before the anticipated project start date as project costs.

Describe any funding requested or received from other Federal partners. Note: other sources of Federal funding may not be counted towards the required cost share unless otherwise allowed by statute.

No funding has been, or will be, requested or received from other Federal partners for the proposed project.

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

There are no pending funding requests for the proposed project.

TABLE B-1. SUMMARY OF NON-FEDERAL AND FEDERAL FUNDING SOURCES	
FUNDING SOURCES	**AMOUNT**
Non-Federal Entities	
1. City of Wilmer	$298,204
Non-Federal Subtotal	$298,204
Other Federal Entities	
Not Applicable	$0
Other Federal Subtotal	$0
REQUESTED RECLAMATION FUNDING	$198,802

BUDGET PROPOSAL

TABLE B-2. PROPOSED BUDGET				
	COMPUTATION			
BUDGET ITEM DESCRIPTION	**$/UNIT**	**UNIT**	**QUANTITY**	**TOTAL COST**
SALARIES AND WAGES				
Project Manager	$34.66	HR	160	$5,546.00
FRINGE				
Project Manager	$9.29	HR	160	$1,486.00
TRAVEL				
Not applicable				
EQUIPMENT (OVER $5,000)				
(00-080-125-HMY) 3G Mobile Laptop Reading System, Hard Shell Case to include: • Model 5x Semi-Rugged Laptop w/ AC/DC power supply, • Hard Shell Carrying Case Kit (Hard Shell Case, laptop power supply, power cord), • 3G DMMR Receiver & Charger Includes 3G Tech.net Software with Mag Mount & Permanent M01mt Antenna, • Proper Communication Cable included with system, • GPS Receiver (RSS-HAR-A-TR2) 2-Day On-Site Training, System Configuration & Travel. (RSS-HAR-M-12) 1- Year-Harmony Mobile Annual Hosting & Support Based on a total of 1- 1500 services. **(Vendor: Underground Utility Supply)**	$18,500.00	LS	1	$18,500.00
SCADA Master Control Panel System Equipment to include: • Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MOS Transnet License-Free Radio. • Allen Bradley Micrologix PLC. • Sensphone 1800 Alarm dialer. • Rohn 45G Antenna Tower				

TABLE B-2. PROPOSED BUDGET				
	COMPUTATION			
BUDGET ITEM DESCRIPTION	$/UNIT	UNIT	QUANTITY	TOTAL COST
• Antenna, polyphaser, coaxial cable, and connectors as needed for radio communications. • Dell computer package with 40" flat screen monitor, UPS, and VTSCADA HMI software package. • Conduit and wire as required. • Control panel installation, integration, and programming. • Install tower. • HMI development. • Testing and Start-up. • One-year parts and labor warranty. **(Vendor: Dedicated Controls LLC)**	$41,554.00	LS	1	$41,554.00
SCADA Monitoring Control Panel System Equipment (At 6 locations) to include: • Control Panel (24”x24”x8” enclosure and MDS TarsNet License Free Radio). • Allen Bradley Micrologix PLC. • AI module. • Antenna, polyphaser, and connections as needed for wireless radio communications. • 2 – WIC Steel Flush Valves. • 2 – Pressure transducers. • Temperature transducer. • Conduit and wiring as required. • Control panel installation, integration, and programming. • Testing and start-up. • One-year parts and labor warranty **(Vendor: Dedicated Controls LLC)**	$20,000.00	EA	6	$120,000.00
SUPPLIES/MATERIALS (UNDER $5,000)				
B12-A11-A01-0101A-1; 5/8" X 3/4" BLMJ 3G-DS RADIO READ MASTER METER WITH REINFORCED PLASTIC BOTTOM; USG- LEAD FREE.	$195.00	EA	1,100	$214,500.00

TABLE B-2. PROPOSED BUDGET				
	COMPUTATION			
BUDGET ITEM DESCRIPTION	**$/UNIT**	**UNIT**	**QUANTITY**	**TOTAL COST**
(Vendor: Underground Utility Supply)				
1" 3G-DS RADIO READ BLMJ MASTER METER-LEAD FREE BODY WITH PLASTIC BOTTOM: USG: B16-A1 1-A01-010 1A-1. **(Vendor: Underground Utility Supply)**	$285.00	EA	52	$14,820.00
FEES				
Not applicable.				
CONTRACTUAL				
General Contractor to install meters and SCADA equipment	$77,600	LS	1	$77,600
ENVIRONMENTAL COMPLIANCE				
BOR Staff	$1,000	LS	1	$1,000
Environmental Documentation	$50	HR	40	$2,000
TOTAL INDIRECT COSTS				
Not applicable				
TOTAL PROJECT COSTS				**$497,006**
Total Reclamation Request (40% of Total Project Cost)				**$198,802**
Total City Contribution (60% of Total Project Cost)				**$298,204**

BUDGET NARRATIVE

SALARIES AND WAGES: $7,032

The Salaries and Wages section of the project encompasses City personnel costs for the Project Manager, Water Department Staff, and Project Administration and are listed as grant requested items and described below.

Program Manager: $34.66 Hourly Salary Rate x 160 Hours = $5,546

Mr. Eric Moss, Public Works Director, will oversee the day-to-day project management and operations to include overseeing the project schedule, budget, significant milestones, and for managing all project staff. Additionally, the Project Manager will oversee the vendor agreement for equipment and training, and development of the ongoing and final performance reports. The base hourly rate for the Public Works Director is $34.66 per hour and they will dedicate 160 hours total to this project. Mr. Moss has over 16 years of experience as a Water Operations Manager and Water and Sewer Supervisor. He has with managing similar projects.

Fringe (Program Manager): $9.29 Hourly Fringe Rate x 160 Hours = $1,486

The City's fringe rate For the Public Works Director is $9.28 hourly and they will dedicate 160 hours to this project. Fringe includes FICA, Worker's Comp, Unemployment, Health Insurance, Dental Insurance, Vision Insurance, Life Insurance, and TMRS retirement.

Total Salaries and Wages: $7,032

TRAVEL: $0
Not applicable.

EQUIPMENT (OVER $5,000): $47,230
The equipment to be purchased for the proposed project includes the following:

- **AMI Equipment: $18,500 (LS) x 1 (QTY) = $18,500 (Vendor: Underground Utility Supply)**
  - **(00-080-125-HMY) 3G Mobile Laptop Reading System, Hard Shell Case (Vendor: Underground Utility Supply)**
    - Model 5x Semi-Rugged Laptop w/ AC/DC power supply,
    - Hard Shell Carrying Case Kit (Hard Shell Case, laptop power supply, power cord),
    - 3G DMMR Receiver & Charger Includes 3G Tech.net Software with Mag Mount & Permanent M01mt Antenna,
    - Proper Communication Cable included with system,
    - GPS Receiver
  - **(RSS-HAR-A-TR2) 2-Day On-Site Training, System Configuration & Travel (Vendor: Underground Utility Supply)**
  - **(RSS-HAR-M-12) 1- Year-Harmony Mobile Annual Hosting & Support Based on a total of 1- 1500 services (Vendor: Underground Utility Supply)**

- **SCADA Main Control Panel Equipment: $41,554 (LS) x 1 (QTY) = $41,554 (Vendor: Dedicated Controls LLC)**
  - **Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MOS Transnet License-Free Radio**
  - Allen Bradley Micrologix PLC
  - Sensphone 1800 Alarm dialer
  - Dell computer package with 40" flat screen monitor, UPS, and VTSCADA HMI software package
  - Rohn 45G Antenna Tower
  - Antenna, polyphaser, coaxial cable, and connectors as needed for radio communications
  - Conduit and wire as required
  - Control panel installation, integration, and programming
  - HMI development

  - Testing and Start-up
  - One-year parts and labor warranty

- **6 – SCADA Monitoring Control Panel Equipment: $20,000 (EA) x 6 (QTY) = $120,000**
  - Control Panel (24”x24”x8” enclosure and MDS TarsNet License Free Radio).
  - Allen Bradley Micrologix PLC.
  - AI module.
  - Antenna, polyphaser, and connections as needed for wireless radio communications.
  - 2 – WIC Steel Flush Valves.
  - 2 – Pressure transducers.
  - Temperature transducer.
  - Conduit and wiring as required.
  - Control panel installation, integration, and programming.
  - Testing and start-up.
  - One-year parts and labor warranty

Total Equipment: $41,554 + $18,500 + $120,000 = $180,054

SUPPLIES/MATERIALS (UNDER $5,000): $229,320

The supplies and materials to be purchased for the proposed project includes the following:

- **B12-A11-A01-0101A-1; 5/8" X 3/4" BLMJ 3G-DS Radio Read Master Meter with Reinforced Plastic Bottom; USG- Lead-free (Vendor: Underground Utility Supply)**
  $195 (EA) x 1,100 (QTY) = $214,500

- **1" 3G-DS Radio Read BLMJ Master Meter - Lead-free Body with Plastic Bottom: USG: B16-A1 1-A01-010 1A-1 (Vendor: Underground Utility Supply)**
  $285 (EA) x 52 (QTY) = $14,820

Total Supplies/Materials = $214,500 + $14,820 = $229,320

CONTRACTUAL: $77,600

General Contractor $77,660 x 1 = $77,600

This cost includes General Contractor overhead, mobilization, and installation of 1,152 meters. It is anticipated that the installation will be accomplished over a one-year period. The installation General Contractor will be selected through a formal bid process. They will be responsible for installing 1,152 Radio Read Master Meter Bottom Load Multi-Jet (BLMJ) meters of varying size (0.75-inch through 1-inch). Each meter site will be examined and determined if digging is required due to meter burial. For each meter, the contractor will remove the old

meter and install the new smart meters. This cost was developed from the City's experience with similar installation projects.

ENVIRONMENTAL AND REGULATORY COMPLIANCE COSTS: $3,000

BOR Staff: $1,000
Local BOR staff provided a lumpsum rate of $1,000 for this task.

City Staff Environmental Documentation: 40 hours x $50/hour = $2,000
It is believed that the proposed project is eligible for a Categorical Exclusion for NEPA. The City of Wilmer has allocated 40 hours for City staff to evaluate and file paperwork for environmental compliance at $50/hour (fully burdened rate).

Total Environmental Costs = $1,000 + $2,000 = $3,000

OTHER EXPENSES: $0
Not applicable.

INDIRECT COSTS: $0
Not applicable.

TOTAL COSTS: $497,006

Federal Request from Bureau of Reclamation:	$198,802
Total Non-Federal (LOCAL) Cost Share:	$298,204
TOTAL PROJECT COST:	**$497,006**

~End of Budget Proposal and Budget Narrative~

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

1. **Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.**

   No; the proposed project will not impact the surrounding environment.

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; there are no known species listed as a Federal threatened or endangered species or designated critical habitat, in the project area.

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 proposed project may have.**

   No; there are no wetlands or other surface waters inside the project boundaries.

4. **When was the water delivery system constructed?**

   The City of Wilmer purchases 100 percent of its potable water from the City of Hutchins via Dallas Water Utilities (DWU). DWU is the water and wastewater service operated by the City of Dallas, Texas and was developed in 1876 by a privately-owned company. The City of Dallas purchased the service in 1881 and it was initially known as the City of Dallas Waterworks. DWU provides services to the Dallas and 31 nearby communities. Wilmer's water delivery system was constructed in 1913.

5. **Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.**

   No; the proposed project will not result in any modification of or effects to individual features of a canal-based irrigation system, such as headgates, canals, or flumes.

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 irrigation district that are listed on or eligible for listing on the National Register of Historic Places.

7. **Are there any known archeological sites in the proposed project area?**

   No; there are no known archeological sites in the proposed project area.

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

   No; the proposed project will not have a disproportionately high and adverse effect on low income or minority populations. The project will benefit all residents of Wilmer which is considered a lower-income disadvantaged community.

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

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

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

    No; the proposed project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

REQUIRED PERMITS OR APPROVALS

No permits or approvals are expected to be required for the proposed project. Project components will be installed on existing facilities.

LETTERS OF SUPPORT

The City of Wilmer received letters of support, which are included in this application, from the following entities:

- Dallas County Commissioner John Wiley Price

- City of Wilmer Mayor Emmanuel Wealthy-Williams
- The City of Hutchins
- North Central Texas Council of Governments
- Dallas Water Utilities
- Area Developer Mark Rader

OFFICIAL RESOLUTION

A resolution from the City Council of the City of Wilmer is enclosed with this application. Please see attached resolution.

CITY OF WILMER, TEXAS

RESOLUTION NO: 19-0919A

A RESOLUTION BY THE CITY OF WILMER APPROVING THE APPLICATION FOR GRANT FUNDS FOR THE BUREAU OF RECLAMATION'S WATERSMART GRANTS: WATER AND ENERGY EFFICIECY GRANTS FOR FISCAL YEARS 2020 AND 2021 FOR THE CITY'S SMART METER CONVERSION AND SCADA SYSTEM IMPLEMENTATION PROJECT.

WHEREAS, the City of Wilmer has prepared an application to apply for federal funding from the United States Department of the Interior, Bureau of Reclamation (Reclamation) to assist in the funding of the Water and Energy Efficiency Project; and

WHEREAS, the funding opportunity provided by Reclamation through their Grant Program entitled "WaterSmart Grants: Water and Energy Efficiency Grants for Fiscal Years 2020 and 2021" Funding Opportunity Announcement No. is BOR-DO-20-F001; and

WHEREAS, the Smart Meter Conversion and SCADA System Implementation Project will convert the City's outdated manual water meters to smart meters that have a fixed network and central location computer which will allow City Staff to access the meters (leak detection, water usage, etc.) from a central location and allow customers to access usage in real time and install a SCADA system to automate the City's water storage tower and lift stations; and

WHEREAS, the Applicant, if selected, will enter into an agreement with Reclamation to carry out the project.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WILMER:

SECTION 1: That the City of Wilmer approves the filing of an application for the improvements of the Smart Meter Conversion and SCADA System Implementation Project.

SECTION 2: That the City of Wilmer certifies that they will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement with Reclamation.

SECTION 3: That the City of Wilmer certifies that they are capable of providing the amount of funding specified in the application.

SECTION 4: That the City of Wilmer appoints the City Administrator, or designee, as agent to conduct all negotiations, execute and submit all documents including, but not limited to applications, agreements, payment requests and so on, which may be necessary for the completion of the aforementioned project.

PASSED AND APPROVED on this 19th day of September, 2019 by majority vote of all members of the City Council of the City of Wilmer.

ATTEST:

Mayra A. Ortiz, City Secretary

APPROVED:

Emmanuel Wealthy-Williams, Mayor

APPROVED AS TO FORM:

Michael B. Halla, City Attorney

Appendix A: Letters of Support

Entity	Received
Commissioner Price	X
Wilmer Mayor Wealthy-Williams	X
City of Hutchins	X
NCTCOG	X
DWU	X
Developer Rader	X

OFFICE OF COMMISSIONER
DISTRICT NO. 3

JOHN WILEY PRICE

September 25, 2019

Secretary David Bernhardt
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

RE: The City of Wilmer's Application for BOR Water and Energy Efficiency Grant Funding

Dear Secretary Bernhardt:

As Commissioner of District 3, where the proposed project is located, I am excited to provide this letter of support for the City of Wilmer's application to the Bureau of Reclamation's WaterSMART: Water and Energy Efficiency Grant program. I proudly support water conservation projects that help to ensure sustainability of one of our most precious natural resources. I recently worked closely with the City of Wilmer to facilitate the installation of the City's new water storage tower and am delighted to see the City pursuing additional water saving infrastructure.

The City's project to convert outdated water meters to advanced meter infrastructure will address system and residential water leaks through a faster leak detection method and real-time water usage data. In addition, the installation of Supervisory Control and Data Acquisition (SCADA) systems to the City's water tower and lift stations will continuously monitor water and sewer levels to detect other water loss scenarios such as overflows. It is estimated that this project will save hundreds of thousands of gallons of water yearly.

Water is a crucial issue facing our district and our state. It is imperative that our Northern Texas cities upgrade outdated water systems to improve delivery and sustainability of this vital resource. For this reason, I support the City's project that will address water supply concerns and sustainability.

I hope that your agency looks upon the application favorably and provides the City of Wilmer grant funding to implement this project that will be a demonstration to other Texas cities of beneficial water conservation projects.

Sincerely,

John Wiley Price
Commissioner, District 3
Dallas County Commissioner's Court

Administrative Office: 411 Elm Street, 2nd Floor Dallas, TX 75202 (214) 653-6671
District Office: 1506 Langdon Road Dallas, TX 75241 (972) 225-2378
website:http://www.dallascounty.org

From the Office of the
City Administrator
Trudy Lewis
Phone: 972-225-6121
Fax: 972-225-5559

September 19, 2019

Secretary David Bernhardt
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

RE: Wilmer's BOR Water and Energy Efficiency Grant Application

Dear Secretary Bernhardt:

On behalf of the City of Hutchins, I would like to provide this letter of support for the City of Wilmer's application for grant funding from the Bureau of Reclamation's WaterSMART Grants: Water and Energy Efficiency Grant program. Hutchins supports Wilmer's efforts to convert the entire City's existing outdated meters to smart meters and install a SCADA system to the City's water storage tower and lift stations.

Currently, the City of Wilmer purchases treated water from Hutchins yearly. The proposed project is expected to save hundreds of acre-feet per year of potable water. The proposed project will benefit the City of Wilmer's regional goals of sustaining water supplies.

This is an important project that will help preserve our precious drinking water supply. Please help us continue the momentum for our community's water-wise projects.

Sincerely,

Trudy Lewis
City of Hutchins

City of Wilmer
Serving Our Community

September 21, 2019

Secretary David Bernhardt
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

Subject: City of Wilmer BOR Water and Energy Efficiency Grant Application

Dear Secretary Bernhardt:

As the Mayor of the City of Wilmer, I am excited to support this grant application for funds to implement the Smart Meter Conversion and SCADA System Implementation Project. The City's project to convert outdated water meters to advanced meter infrastructure is a smart move to address system and residential water leaks through a faster leak detection method and real-time water usage data. In addition, the project will install SCADA systems to the City's water storage tower and lift stations, automating the City's water system infrastructure, which will monitor and coordinate water and sewer levels and send real-time alerts of possible overflows. These types of projects can save hundreds of thousands of gallons of water by quickly identifying the location of a leak and other potential water loss scenarios.

Water is a crucial issue facing our district and our state. It is imperative that our Northern Texas cities upgrade outdated water systems to improve delivery and sustainability of this vital resource that is often taken for granted. Wilmer is a small city, trying to keep up with the demands of the region's extraordinary growth. The project will help us maintain the integrity of our precious natural resources and protect our residents as we move forward. Please help us continue the momentum for our community's water-wise projects.

Sincerely,

Emmanuel Wealthy-Williams, Mayor
City of Wilmer

City of Wilmer Administration
128 N. Dallas Avenue Wilmer, Texas 75172
972-441-6373 972-441-3222 972-441-3061 (fax)

dallas water utilities
city of dallas

September 20, 2019

Secretary David Bernhardt
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

Subject: City of Wilmer Water and Energy Efficiency Grant Project

Dear Secretary Bernhardt:

The Dallas Water Utilities (DWU) is pleased to provide this letter of support for the City of Wilmer's advanced water metering infrastructure and SCADA system implementation project to the Bureau of Reclamation funding under the WaterSMART: Water and Energy Efficiency Grant Program. DWU provides imported water to local water agencies, including the City of Hutchins, from which the City of Wilmer purchases water. The City proposes to convert over 1,000 outdated water meters to advanced infrastructure meters that will modernize the entire city water system and allow for efficient leak detection. In addition, the City proposes to install a SCADA system to automate the City's water storage tower and lift stations to ensure proper water and sewer levels and warn of possible overflows. The project is expected to save hundreds of acre-feet per year of potable water that can remain in the Cottonwood Creek Basin and contribute to our goals of sustaining groundwater supplies.

Our agency fully supports the City's commitment and forward-thinking to improve water infrastructure. We respectfully ask you to find favor in the City's application for smart water conservation infrastructure that will protect our water resources.

Sincerely,

Terry S. Lowery
Director, Dallas Water Utilities

1500 Marilla, 4AN, Dallas, Texas 75201
Telephone: (214) 670-3146 • Fax: (214) 670-3154

North Central Texas Council Of Governments

October 1, 2019

Secretary David Bernhardt
U.S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

Subject: City of Wilmer Smart Meter and SCADA Installation Project

Dear Secretary Bernhardt:

The North Central Texas Council of Governments (NCTCOG) is pleased to provide this letter in support of the City of Wilmer's grant application for Bureau of Reclamation funding for the Smart Meter and SCADA Installation Project. The City proposes to convert over 1,000 original, outdated meters with smart meter technology and install SCADA systems to the City's water storage tower and lift stations. These replacements will help to ensure leaks are detected and water levels are properly maintained, saving yearly on essential water supply provisions. The City of Wilmer is growing quickly, and residential and business development continues to surge putting pressure on the City's existing water system.

NCTCOG is committed to working closely with communities and other stakeholders to ensure the stability and availability of precious water resources in the region. We will assist the City by providing data relevant to the project area if needed. The proposed project for Cottonwood Creek Basin aligns with our vision for water conservation and energy efficiency throughout the region.

Sincerely,

Edith Marvin, P.E.
Director, Environment and Development Department
North Central Texas Council of Governments

616 Six Flags Drive, Centerpoint Two
P. O. Box 5888, Arlington, Texas 76005-5888
(817) 640-3300 FAX: 817-640-7806 ♻ recycled paper
www.nctcog.org

Prime Rail Interests LLC

September 23, 2019

Secretary David Bernhardt
U. S. Department of the Interior
1849 C Street, N. W.
Washington, DC 20240

Subject: City of Wilmer Meter and SCADA Project Support

Dear Secretary Bernhardt:

As president of Prime Rail Interests LLC and a longtime Southern Dallas County developer, I support the City of Wilmer's application for Bureau of Reclamation (BOR) Water and Energy Efficiency Grant funding to implement the City's Smart Meter Conversion and SCADA System Implementation Project. I have worked with Wilmer and the surrounding areas for many years developing the Sunridge Business Park, 3,000 acre Prime Pointe Industrial Park, and the Union Pacific Intermodal Terminal. Wilmer is prime for new industry and business headquarters. Already, the area including Wilmer is being considered the Dallas County Inland Port which is rapidly bringing new businesses and residents to the area.

The City depends heavily on this new growth and the City's infrastructure must keep up. The proposed project will definitely be an attractor for new business growth. The smart meters will help curb system and customer water leaks, allowing for faster leak detection, real-time water usage data, and monetary savings for customers who see the result of leaks on their monthly bill. In addition, the proposed project will potentially save hundreds of acre-feet of precious water per year.

Please join me in support of this important project to modernize the city's water system for improved water management and sustainability of our resources.

Sincerely,

Mike Rader, President
Prime Rail Interests LLC

P.O. Box 249, Colleyville, Texas 76034 817-310-5595 Telephone

Appendix B: Vendor Materials

UNDERGROUND UTILITY SUPPLY

3815 S. EASTMAN RD
LONGVIEW, TX 75602
903-757-2121 FAX 903-757-5252

QUOTATION

Date	ESTIMATE #
7/18/2019	10125

Name / Address
CASH SALE TYLER CITY OF WILMER

Disclaimer:
SUBJECT TO OUR USUAL TERMS AND CONDITIONS OF SALE. ANY WARRANTY PROVIDED IS THAT OF THE MANUFACTURER.

ITEM #	Qty	PER	ITEM	DESCRIPTION	PRICE	TOTAL
(1)	1	EA	1500	(00-080-125-HMY) 3G Mobile Laptop Reading System, Hard Shell Case To include: Model 5x Semi-Rugged Laptop w/ AC/DC power supply, Hard Shell Carrying Case Kit (Hard Shell Case, laptop power supply, power cord) , 3G DMMR Receiver & Charger Includes 3G Tech.net Software with Mag Mount & Permanent Mount Antenna, Proper Communication Cable included with system, GPS Receiver. (RSS-HAR-A-TR2) 2-Day On-Site Training, System Configuration & Travel (RSS-HAR-M-12) 1- Year-Harmony Mobile Annual Hosting & Support Based on a total of 1- 1500 services.*	18,500.00	18,500.00T
(2)	1,100	EA	5834MM3...	B12-A11-A01-0101A-1; 5/8" X 3/4" BLMJ 3G-DS RADIO READ MASTER METER WITH REINFORCED PLASTIC BOTTOM; USG- LEAD FREE	195.00	214,500.00T
	52	EA	1MM3GD...	1" 3G-DS RADIO READ BLMJ MASTER METER- LEAD FREE BODY WITH PLASTIC BOTTOM; USG; B16-A11-A01-0101A-1	285.00	14,820.00T

Subtotal	Sales Tax (8.25%)	Total

Dedicated Controls LLC

PO Box 100
Evant, TX 76525

PROPOSAL

Project: City of Wilmer SCADA System Implementation

Date: September 30, 2019

To: City of Wilmer

Attention: Eric Moss

Project Reference: City of Wilmer SCADA Implementation Project

Dedicated Controls LLC is pleased to offer the following proposal for the City of Wilmer SCADA Implementation Project to furnish and install all material relative to the SCADA System as defined hereafter:

Plans & Specification: N/A; Were not provided for this scope of work.

Scope of Work: Supply and install necessary computer hardware, software, instrumentation, and control panels at the Office, EST/PS and 5 Lift Stations for the SCADA system.

Office

Material to be furnished by Dedicated Controls LLC.

1. 1 = Fully assembled Local Control Panel, 24”x24”x8” Enclosure, MDS Transnet License Free Radio
2. 1 = Allen Bradley Micrologix PLC
3. 1 = Sensphone 1800 Alarm dialer
4. 1 = Rohn 45G Antenna Tower
5. Lot = Antenna, Polyphaser, coax, and connectors as required for radio communications
6. 1 = Dell computer package with 40” flatscreen monitor, UPS, and VTSCADA HMI software package
7. Lot = Conduit and wire as required

Services to be provided by Dedicated Controls LLC.

1. Control panel installation, integration, and programming
2. Install Tower
3. HMI development
4. Testing and Start-up
5. One year parts and labor warranty

Price:.....$41,554.44

EST/PS

Material to be furnished by Dedicated Controls LLC.

1. 1 = Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MDS Transnet License Free Radio
2. 1 = Allen Bradley Micrologix PLC
3. 1 = AI Module
4. Lot = Antenna, Polyphaser, coax, and connectors as required for radio communications
5. Lot = Conduit and wire as required
6. 2 = WIC Steel Flush Valves
7. 2 = Pressure Transducers
8. 1 = Temperature Transducer

Services to be provided by Dedicated Controls LLC.

1. Control panel installation, integration, and programming
2. Testing and Start-up
3. One year parts and labor warranty

Price : $20,233.58

Lift Station #1

Material to be furnished by Dedicated Controls LLC.

1. 1 = Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MDS Transnet License Free Radio
2. 1 = Allen Bradley Micrologix PLC
3. 1 = AI Module
4. Lot = Antenna, Polyphaser, coax, and connectors as required for radio communications
5. Lot = Conduit and wire as required
6. 2 = WIC Steel Flush Valves
7. 2 = Pressure Transducers
8. 1 = Temperature Transducer

Services to be provided by Dedicated Controls LLC.

1. Control panel installation, integration, and programming
2. Testing and Start-up
3. One year parts and labor warranty

Price : $20,000

Lift Station #2

Material to be furnished by Dedicated Controls LLC.

1. 1 = Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MDS Transnet License Free Radio
2. 1 = Allen Bradley Micrologix PLC
3. 1 = AI Module
4. Lot = Antenna, Polyphaser, coax, and connectors as required for radio communications
5. Lot = Conduit and wire as required
6. 2 = WIC Steel Flush Valves
7. 2 = Pressure Transducers
8. 1 = Temperature Transducer

Services to be provided by Dedicated Controls LLC.

1. Control panel installation, integration, and programming
2. Testing and Start-up
3. One year parts and labor warranty

Price : $20,000

Lift Station #3

Material to be furnished by Dedicated Controls LLC.

1. 1 = Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MDS Transnet License Free Radio
2. 1 = Allen Bradley Micrologix PLC
3. 1 = AI Module

4. Lot = Antenna, Polyphaser, coax, and connectors as required for radio communications
5. Lot = Conduit and wire as required
6. 2 = WIC Steel Flush Valves
7. 2 = Pressure Transducers
8. 1 = Temperature Transducer

Services to be provided by Dedicated Controls LLC.

1. Control panel installation, integration, and programming
2. Testing and Start-up
3. One year parts and labor warranty

Price : $20,000

Lift Station #4

Material to be furnished by Dedicated Controls LLC.

1. 1 = Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MDS Transnet License Free Radio
2. 1 = Allen Bradley Micrologix PLC
3. 1 = AI Module
4. Lot = Antenna, Polyphaser, coax, and connectors as required for radio communications
5. Lot = Conduit and wire as required
6. 2 = WIC Steel Flush Valves
7. 2 = Pressure Transducers
8. 1 = Temperature Transducer

Services to be provided by Dedicated Controls LLC.

1. Control panel installation, integration, and programming
2. Testing and Start-up
3. One year parts and labor warranty

Price : $20,000

Dedicated Controls LLC

PO Box 100
Evant, TX 76525

Lift Station #5

Material to be furnished by Dedicated Controls LLC.

1. 1 = Fully assembled Local Control Panel, 24"x24"x8" Enclosure, MDS Transnet License Free Radio
2. 1 = Allen Bradley Micrologix PLC
3. 1 = AI Module
4. Lot = Antenna, Polyphaser, coax, and connectors as required for radio communications
5. Lot = Conduit and wire as required
6. 2 = WIC Steel Flush Valves
7. 2 = Pressure Transducers
8. 1 = Temperature Transducer

Services to be provided by Dedicated Controls LLC.

1. Control panel installation, integration, and programming
2. Testing and Start-up
3. One year parts and labor warranty

Price : $20,000

Proposal Exclusions:

1. Any other modifications, purchases, installations not included in the above equipment and services.

Proposal Clarifications:

1. Pricing does not include sales tax or bonding cost.
2. Payment terms to be NET THIRTY (30) days of project completion.
3. Pricing shall be valid for (30) days only from proposal date.
4. Warranty shall be for a period as per the project specifications to repair/replace furnished products that are found to be defective due to manufacturing defects and/or improper workmanship. Damages resulting from acts of God and/or improper maintenance shall not be covered by this warranty.

Price Total: $161,788.02

Please Note: Additional scope of work changes that may be requested will be billed on a time and material basis.

We appreciate the opportunity and look forward to providing services for the above scope of work. Thank you and please feel free to call if there are any questions.

Regards,

Alan Korenek

Alan Korenek
Assistant General Manager
Dedicated Controls LLC
Office: 972-736-2880 ext. 104
Cell: 512-645-8773
Email: alan@dedicatedcontrols.com

Authorized representative's signature and date for approval of

project:_____.

Master Meter's Multi-Jet meter exceeds the AWWA C708 standard. With sensitivity to measure water flowing as low as 1/8 gallon per minute and accuracy unaffected by common particulates and build-up that would freeze other types, you can count on our Multi-Jet technology.

Technical Specifications:

AWWA Standard -Meets or exceeds all sections of AWWA Standard C-708, most recent revision. Compliant with SDWA, NSF ANSI 372 and NSF ANSI 61 standards.

Register - Standard Direct Read, DIALOG® 3G AMR System registers, AccuLinx Encoder, and IP 68 Electrical Output registers available. Together, an integrated and migratable technology environment is attained; direct, proximity (touch), mobile AMR, and Fixed Network AMI.

Register Sealing - Direct Read and DIALOG registers are permanently sealed with a scratch resistant glass lens, stainless steel base and wrap-around gasket to prevent intrusion of dirt or moisture.

Features & Benefits:

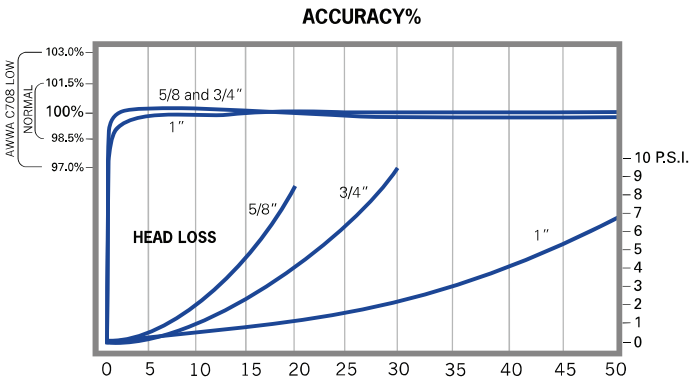
- Rugged basket strainer built from advanced polymer materials for superior wear mitigation.
- Proprietary design produces smooth, laminar flow profile for improved accuracy
- Award-winning DIALOG 3G register design houses all vital components - encoder, RF transmitter, battery and antennae - safely within the register's stainless steel and tempered glass enclosure. Free of external wires, components and connections - the #1 cause of field related issues on competitive designs.
- Assures compliance with the Safe Drinking Water Act (SDWA).
- Measures with only one moving part that is hydro-dynamically balanced on a sapphire bearing to preserve accuracy and promote a positive bottom line.
- Exceptional performance in passing entrained solids and operating in environments with high mineral content.
- Clean, elegant measurement design is highly sensitive to leaks and low flow while limiting wear for excellent revenue protection.

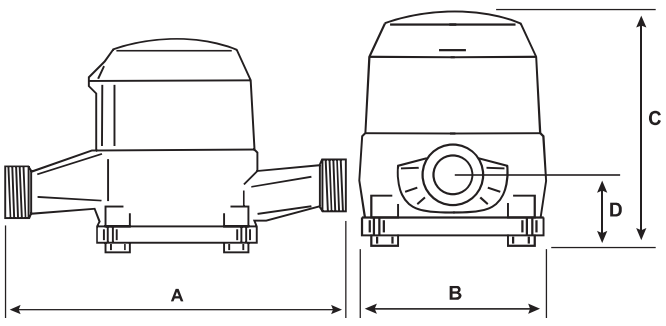
Technical Specs (Cont'd):

- **Register Unit** - Registration available in U.S. gallons, cubic feet or cubic meters.
- **Test Circle** - Large center sweep hand with one hundred (100) clearly marked gradations on the periphery of the dial face (available on Direct Read and DIALOG 3G registers).
- **Design/Operation** - Velocity-type flow measurement. Water that is evenly distributed by multiple converging inlet ports flows past an impeller in the measuring chamber, creating an impeller velocity directly proportional to water flow rate. The meter's register integrates that velocity into totalized flow. An inherent advantage for this design is unparalleled wear mitigation leading to sustained revenues. The register assembly is removable under line pressure permitting seamless, simplified upgrades in reading technology.
- **Strainer** - A rugged, 360-degree advance polymer basket strainer protects the critical measuring element from damage. The unique strainer design smoothes the flow of water entering into the meter creating a laminar flow that is gentle on the meter's internal components. Tough materials operating in a smooth, balanced environment enable the meters to perform more accurately over time. Utilities' investments last longer while capturing more revenue.
- **Measuring Chamber** - The measuring chamber housing and measurement element are built with an advanced synthetic polymer. Measurement surfaces are not wear surfaces, providing sustained accuracy despite the presence of entrained solids in the water. A long life, synthetic sapphire bearing serves as a wear surface with radially balanced water flows. The chamber housing is constructed in two parts to allow access to the impeller. Bottom plates available in Bronze, Cast Iron (CI) or Engineered Plastic.

METER OPERATING CHARACTERISTIC/DIMENSION	*5/8"*	*3/4" x 7-1/2"*	*3/4" x 9"*	*3/4" x 9" x 1"*	*1"*
Flow Rating (gpm)	**20**	**30**	**30**	**30**	**50**
Continuous Flow (gpm)	**15**	**20**	**20**	**20**	**30**
Normal Flow Range (gpm)	**1-20**	**2-30**	**2-30**	**2-30**	**3-50**
Extended Low Flow (gpm)	**1/4**	**1/2**	**1/2**	**1/2**	**3/4**
Maximum Working Pressure (psi)	**150**	**150**	**150**	**150**	**150**
Maximum Working Temperature (F)	**120**	**120**	**120**	**120**	**120**
Length (A below)	**7-1/2"**	**7-1/2"**	**9"**	**9"**	**10-3/4"**
Width (B below)	**3-5/8"**	**3-5/8"**	**3-5/8"**	**3-5/8"**	**4"**
Height, standard register with lid (C below)	**5"**	**5"**	**5"**	**5"**	**5-1/4"**
Height, bottom to center line (D below)	**1-1/2"**	**1-1/2"**	**1-1/2"**	**1-1/2"**	**1-3/4"**
Weight (lbs)	**3.95**	**4.0**	**4.1**	**4.6**	**5.25**
Packed To Carton	**6**	**6**	**6**	**4**	**4**
Carton Weight (lbs)	**25.1**	**25.4**	**26**	**19.8**	**22.4**

Accuracy and Head Loss Chart





V.062118_f

MONITORING
&
ALERTING

HOW LONG BEFORE **YOU** KNOW **SOMETHING IS WRONG?**

COUNTLESS INDUSTRIES DEPEND ON SENSAPHONE FOR THE MOST COMPREHENSIVE REMOTE MONITORING SOLUTIONS AVAILABLE. WHEN YOU NEED TO BE ABSOLUTELY SURE A REMOTE SITE IS STABLE, SECURE, AND MONITORED AROUND THE CLOCK, THERE'S NO SUBSTITUTE FOR CERTAINTY.

SENSAPHONE® 1800

GET ALARMS AND ALERTS... WITH RUGGED PHONE NOTIFICATIONS

- Simple, convenient, cost-effective remote monitoring
- Rugged, weatherproof enclosure protects in harsh environments
- Receive custom voice alerts and alarm notifications over standard telephone lines
- Notifies up to eight people by voice phone call in the event of an alarm
- Real time status updates available
- Included rechargeable battery backup
- Up to eight external sensors monitor temperature, humidity, water, and more

Sensaphone 1400 & 1800 Series

Keypad
Makes programmin
and easy. LED light
quick visual status.

Battery Backup
Rest easy knowing that even if the power goes out, the 1800 will keep monitoring.

Power
Comes with a plug in power supply that also monitors for power failures.

Out
Co
a l
ne

Phone Line
erent
n an
cted.

Inp
Accept eight different inputs – a wide range of sensors are av

Enclosure
The 1800 comes sealed in a weatherproof NEXA 4X enclosure which allows it to be placed in less than ideal environments.

Contact Series | 2.8K Series | 10K Series | 4-20mA Series

The Sensaphone 1400 provides the same features but with four inputs.

Learn More:
www.sensaphone.com/1800

Popular Sensors & Accessories

2.8K Room Temperature Sensor FGD-0100	Zone Water Detection Sensor FGD-0056
2.8K Weatherproof Temperature Sensor FGD-0101	Infrared Motion Detection Sensor FGD-0007
Temp Alert Temperature Switch FGD-0022	Smoke Detector w/battery backup FGD-0049-B
4-20mA Humidity Sensor FGD-0052	Surge Suppressor for Power and Phone FGD-0067
Magnetic Reed Door & Window Switch FGD-0006	Dual Setback Thermostat FGD-0064
Spot Water Detection Sensor FGD-0013	Bluetooth Cell Phone Interface FGD-0230

SENSAPHONE®
901 TRYENS ROAD
ASTON, PA 19014

PH: 888-369-4781
F: 610-558-0222

WWW.SENSAPHONE.COM

Distributed By:

Appendix C: AMI Case Studies

The City of Baytown Water Department

Reducing Truck Rolls and Customer Inquiries with the R900® System's Consumption Activity History and Targeted Fixed Network

GETTING ON TRACK WITH AMR – AND MOVING AHEAD

Since the early 1990s, the City of Baytown, Texas has relied on Neptune® meters. At first, readers walked routes to read meters by sight and enter the results into handhelds. A small number of touchpads followed before Baytown adopted mobile automatic meter reading (AMR) in 2005, using ProRead™ registers and R900® radio frequency meter interface units. The system increased metering accuracy and prevented transposed meter readings. In 2010, Gina Rivon joined the department as Utility Billing Manager. Working with Neptune and distributor HD Supply, Rivon began implementing E-CODER®)R900*i*™ integrated absolute encoder/RF MIUs to transition to more of a smart water system.

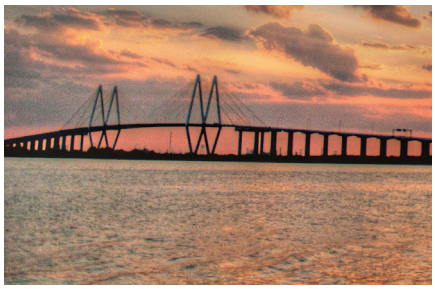
PULLING MORE DATA INSTEAD OF METERS

With most reads for Baytown's approximately 23,000 services handled by mobile collection, reading time dropped to just two or three days, freeing up time and personnel to get back to crucial maintenance, optimizing work flows.

Coupled with the consumption activity history, Rivon's team can run exception reports to verify readings and check for leaks. "We can now take a second look at a meter or notify the customer if they have an open line on their side; and, if it's on the City's side, we can get Public Works to address it," she said.

Over the last summer, customers complained about their high water bills, even while the City took several measures to ensure the meter readings were correct. Some customers requested the City come remove their meter and test it – a costly process for Baytown, and for the customer, who would have to pay a $25 fee when the meter was found to be accurate as 99.9% of them always do.

Now using consumption activity history, the City can preempt complaints of high water bills. Halfway through 2016, re-reads and pull-tests had been reduced by "half, if not more in comparison to last year," she added, "and



CUSTOMER

The City of Baytown Water Department, Baytown, Texas

SERVICE TERRITORY

The City of Baytown Water Department serves approximately 23,000 customers in the Gulf Coast region of Texas.

SOLUTION BENEFITS

Costly truck rolls for pulls/retests reduced by half

Manual reads reduced by 95%

Immediate answers for customers enabled with AMI

Migratable technology enables gradual transition to AMI

now whenever we get a customer call for a re-read, we automatically check to see exactly when they used the water and how much."

With up to 96 days of consumption history, the City can see a pattern of an intermittent or continuous leak and help customers save water as well as money. Rivon said, "We can tell them almost down to the penny where to look for the trouble. Then we don't have to send out a truck to remove and test a meter that we know works – preventing them from having to pay the fee." She said there has been a significant drop in customer calls and that the City has cut manual reads by 95%.

NEW TERRITORY FOR DATA RECON

As Baytown continues to grow, Rivon has taken steps to ensure the City's metering capabilities grow along with it; and Neptune's migratable approach has enabled her to proceed at her own pace. "I'm not one to buy-in all at once," she explained. "I'd like to be able to try something, especially when you already know you have a quality product that works and that you're comfortable with. I prefer to take baby steps."

Enter the R900® Gateway. The fixed network data collector will be installed in an area where new subdivisions are being built. In Rivon's words, it will "eliminate lag time" in getting data from the field to the office. Personnel will now be able to provide data in seconds to answer customers' questions while still on the phone during a call.

Even in walk-by situations, immediate customer service is now possible. Beginning in October 2016, the City will pair Neptune's NGO™ app with Baytown's existing R900® Belt Clip Transceivers to analyze water consumption in the field for homeowners, showing their usage on graphs so they can have a better understanding of what personnel see in the office.

Because Neptune's walk-by, mobile, and fixed network technology all receive data from the same endpoints, Baytown can make a gradual transition to full fixed network, without adding costs on the front end. Already, Rivon can demonstrate to other stakeholders the benefits of the Neptune System, including improved customer service, fewer costly truck rolls, and reduced manual reads.

As a manager with self-confessed "trust issues", Rivon has been pleased with the proof Neptune continually offers – accurate readings, fast, reliable communication, and products which allow gradual implementation over time. "The new technology allows us to gain the trust of our customers as we plan and budget for the future with an even smarter water utility. They can see how it's worked so far and how we've benefited from it." She summed up by saying, "I'm very passionate about what I do and want to know what all is available. Neptune gives me the tools so I can do what I need to do to provide the best service possible."

"The new technology allows us to gain the trust of our customers as we plan and budget for the future with an even smarter water utility." - Gina Rivon, Utility Billing Manager, City of Baytown Water Department

NEPTUNE TECHNOLOGY GROUP

#winyourday
neptunetg.com

Neptune Technology Group
1600 Alabama Highway 229
Tallassee, AL 36078
800-633-8754 f 334-283-7293

The City of Bovina

R900® System Keeps track of City's Water Consumption — and More than Earns its Keep

A LONG DRY SPELL – OLD METERS, MISREADS, AND LOST REVENUE

The City of Bovina was incorporated in 1956, but its history goes back much further. Now home to approximately 1,900 residents, the City gets its name from its former status as "Bull Town", the world's largest cattle shipping site in the early 1890s during the reign of the XIT Ranch in the Texas Panhandle. Not far from the New Mexico border, Bovina has been faced with two major challenges in recent years – a poverty rate of 21 percent and the area's worst drought on record.

When a year goes by without measurable precipitation, water becomes an even more precious commodity. But with aging distribution lines and a water meter population dating to the 1950s and 1960s, the City had a tough time keeping track of the water and billing for it. According to City Manager Jana Pitcock, like many small cities, Bovina had been replacing infrastructure a little bit at a time as limited funds became available. This led to a mish-mash of meters from different manufacturers and different decades measuring flow for the City's 600 residential and 50 commercial accounts.

Director of Public Works Cesar Marquez said, "We were using logbooks to read different routes of the City, with two guys per book. We'd go meter by meter, open the lid, and one would call out the reading while the other wrote it down with a pencil. That led to a lot of mistakes." Just to collect the reads, it took six personnel two days. And those years when there was winter precipitation, Marquez said, "We used to have to get the metal detector to find meters in the snow – it could take a whole week."

Once the meter readings were written down and turned in, two clerks would each spend two days keying in the data. Becky Beekman, who manages the accounts payable and utility billing for the City, said, "In running the audit report, the usage would be way off. There was a lot of transposition of numbers – and a lot of rereads."

CUSTOMER

The City of Bovina, Texas

SERVICE TERRITORY

Bovina is a city in Parmer County, Texas, United States. The population was 1,868 at the 2010 census.

SOLUTION BENEFITS

Addressed high water bill complaints with E-CODER®)R900*i*™ consumption activity history

Saved water by increasing customer awareness of leaks so they can be fixed

Water usage from City's wells decreased while captured revenue increased

Revenue was 50% above budget, even for the winter months, during a drought-driven year

Read time reduced from two days to three hours

MAKING THE NEPTUNE® CONNECTION WITH R900 AMR

Bovina native Charlie Trimble also happens to be a Senior Territory Manager at Neptune Technology Group. "For years," he said, "I asked the City to look at automating their meter reading, but funding was a problem." By 2009, funding became available to address water infrastructure needs. OJD Engineering worked with Ray Richardson, System Specialist for HD Supply Waterworks, to assist the City of Bovina in creating the specifications for the project. Pitcock and her team then worked with Trimble and HD Supply to secure new water meters and E-CODER®)R900*i*™ units, which combine the Neptune® field-proven solid state absolute encoder with a radio frequency transmitter – and offered leak, tamper, and reverse flow detection as well as consumption activity history.

"The reason we chose Neptune was because they had the best product," said Pitcock. To take advantage of the R900® System's mobile reading abilities, the City selected the Neptune handheld that the City used as a mobile data collector.

The City performed its own installation of the new meters and E-CODER)R900*i* units beginning in November 2010. To allow for the radio antennas, Marquez and his crew retrofitted the metal meter pit lids using a plasma cutter, saving the City thousands of dollars. The installation process was extended to six or seven months to allow Beekman time to enter the new components into the billing system.

As Bovina progressed through the changeout, it realized the extent of its old system's problems. "There were small leaks everywhere," said Marquez. "For every five meters we changed, at least one was leaking, both on our side and on the customer side."

In early 2012, installation was virtually complete. "We have a couple of big meters left to change at a school – but we're waiting until the end of their school year," Marquez said. "They've been getting millions of gallons of free water because of the old meter they have."

A TIME FOR A CHANGE FINDS EXTRA TIME, EXTRA CHANGE

With installation largely over, Beekman is impressed with the change: "It's unreal how much time I'm saving compared to before."

"It's freed up a lot of time for [the meter readers as well]," Marquez added. "Our read time went from a couple of days to just three hours. Now we have one person driving and another using the handheld."

"We've been able to reallocate personnel to other tasks like building roads," Pitcock said. "Before, a third of our streets were dirt. We've also freed our guys to use their talents in other directions. Already they've helped beautify parks, put crosses in the cemetery, put in new playground equipment, and started work on our new community center. They're really helping move the city forward." Not only that, but by taking care of these projects themselves, the City staff saves thousands of dollars that would have otherwise been paid to contractors to handle the work.

CONSUMPTION DATA IS CUSTOMER PROOF

It wasn't just savings that the City noticed. "We saw a jump in revenue right away," said Pitcock. By February of 2011, customers were calling the City to complain about the higher bills. Thanks to consumption activity history, Marquez can show them charts with usage by time of day that proves the bills are right on the money. "We have proof we're doing the reading of meters correctly," Pitcock added.

"There was one gentleman who had a two-inch meter on a sprinkler system that had registered 4,000 gallons a month," said Marquez. After that meter was replaced, the usage jumped to 19,000 and finally 32,000 gallons. "He said, 'I'm not using that much.' And I showed him, saying, yes, you are – and that's why your grass is so green."

Another complaint came from a woman whose husband had been overwatering their lawn. Beekman said, "We had their exact consumption, daily and hourly." Marquez added, "And this was during a drought; when you walked on top of her yard it was squishy." That was not her

only complaint. “She also thought the antennas on [the E-CODER)R900*i* units] were measuring the rotation of car wheels as they drove down her street, somehow spinning her meter faster and making her bills higher,” laughed Marquez.

Trimble relayed how his own father, who lives on the outskirts of town, questioned why his water meter was running at all hours. It turned out that the City was able to identify a continuous leak, with water seeping from one of his livestock tanks.

PAYBACK IS A BEAUTIFUL THING

“We’re giving our customers the opportunity to see leaks they have that need to be fixed,” Pitcock said. “We have a lot of really old homes dating back to the 1920s and 1930s – Charlie’s dad’s house is one of the newer ones, having been built in the 1970s – and a lot of people haven’t known about or upgraded problems in their own homes.”

A few customers aside, the majority of residents stopped watering their lawns and curbed their usage during the recent drought, Pitcock added. Marquez agreed, saying that in the past year, “Water usage went down from the wells – but revenue went up.”

In fact, revenue for the year after the conversion was way up. “We were 50 percent above budget, even for the winter months, during a drought-driven year,” said Pitcock. “If I knew then what I know now, we could’ve easily paid for the system a long time ago. Small cities need to know that the revenue increase they see in a year with Neptune could pay for their system.”

“We were 50 percent above budget, even for the winter months, during a drought-driven year. If I knew then what I know now, we could’ve easily paid for the system a long time ago. Small cities need to know that the revenue increase they see in a year with Neptune could pay for their system.” - Jana Pitcock, City Manager, City Of Bovina

NEPTUNE TECHNOLOGY GROUP

#winyourday
neptunetg.com

Neptune Technology Group
1600 Alabama Highway 229
Tallassee, AL 36078
800-633-8754 f 334-283-7293

City of North Miami Beach, Florida

Leveraging Itron AMI to Identify & Repair 23 Leaks, Saving 27 Million Gallons of Water Annually

OVERVIEW

Until recently, the City of North Miami Beach relied on traditional walk-up, manual meter reading, and a leak detection service that visited quarterly to survey areas of its distribution system. Surveyors would visit two weeks per quarter, helping city staff systematically go from one end of the 550-mile pipeline system to the other in one-mile sections—it took one and a half years to get through the city's 25-square-mile service territory. While the city was able to maintain its system and identify leaks, the process was labor intensive and the city understood that automating meter reading and leak detection could be done simultaneously, saving precious time, staff resources, money—and most importantly, water.

SOLUTION

The City of North Miami Beach is leveraging Itron's Advanced Metering Infrastructure (AMI) solution, equipped with leak detection technology and cloud-based analytics, which now utilize the robust and secure Microsoft Azure platform. The project, completed in 2015, includes 38,000 communication modules along with 11,000 acoustic leak sensors. The new system is providing North Miami Beach with real-time data on customer usage and potential leaks throughout the system. Instead of potentially taking more than a year to identify leaks, the city now knows within three days if a leak occurs. In 2016, North Miami Beach's transition won *Water & Wastes Digest* magazine's Top Projects Award.

"After a competitive pilot, it was evident Itron's solution and vision best suited North Miami Beach's long-term strategy to expand services beyond meter reading," said Karim Rossy, chief engineer for the City of North Miami Beach. "Itron's AMI solution has the ability to not only bring back hourly reads, but also survey our distribution system for leaks on a daily basis."

CUSTOMER

City of North Miami Beach, FL

SERVICE TERRITORY

The City of North Miami Beach, Florida produces 21 million gallons of water per day, delivered to 38,000 endpoints across 25-square-miles of Northern Miami-Dade County

TECHNOLOGY

Itron AMI solution equipped with leak detection technology and analytics

BENEFITS

- 23 leaks identified and repaired, saving an estimated 27 million gallons and $38,000 annually
- Improved efficiency of meter reading and billing
- Enhanced safety of meter readers
- Increased quality of customer service by eliminating the need of estimated bills
- Customers may check own usage via secured website

"We chose Itron for this project because of the company's commitment to quality and extensive experience helping utilities with automated and advanced metering deployments."

— Ana M. Garcia, City Manager.

With Itron's AMI solution, North Miami Beach is able to enhance customer service, protect revenue, forecast consumption, analyze flow and support district metering by leveraging detailed consumption and meter alerts collected by Itron Analytics in the cloud. The utility's customers now have access to detailed consumption information through a secure customer web portal so they can better manage their usage, conserve water and save money.

"Our goal is to drive down costs for the utility and our customers, and reduce the amount of water we produce," said Ana M. Garcia, city manager for the City of North Miami Beach. "We chose Itron for this project because of the company's commitment to quality and extensive experience helping utilities with automated and advanced metering deployments."

BENEFITS

With 11,000 leak sensors installed, the city has already identified and repaired 23 leaks. These leaks will recover an estimated 27 million gallons of water per year, saving North Miami Beach $38,000 annually.

"One big benefit we are seeing from utilizing our new leak detection technology is the time savings, resulting from not having to do physical surveying," said Rossy.

With access to customer consumption data, North Miami Beach is now able to identify leaks they were previously unaware of. This has allowed proactive customer service outreach and customers are happy to be alerted to maintenance and other actions being taken to repair leaks and save them money in the long run.

"With the information we are receiving from the system, we have been able to proactively engage with our customers regarding abnormal usages before sending out a bill," Rossy said. "And our distribution crews have been able to find leaks before they come to the surface, saving close to 23 million gallons of water to date."

This installation has laid the groundwork for additional benefits—not only to the utility, but for customers as well—including:

- Automated leak detection, which will help drive costs down for both the utility and customer.
- Improved efficiency of meter reading and billing.
- Enhanced safety of meter readers.
- Increased quality of customer service by eliminating the need of estimated bills.
- Customers can check own usage via secured website.

Itron

Join us in creating a more **resourceful world**.
To learn more visit **itron.com**

CORPORATE HQ
2111 North Molter Road
Liberty Lake, WA 99019 USA
Phone: 1.800.635.5461
Fax: 1.509.891.3355

Appendix D: Planning Documents

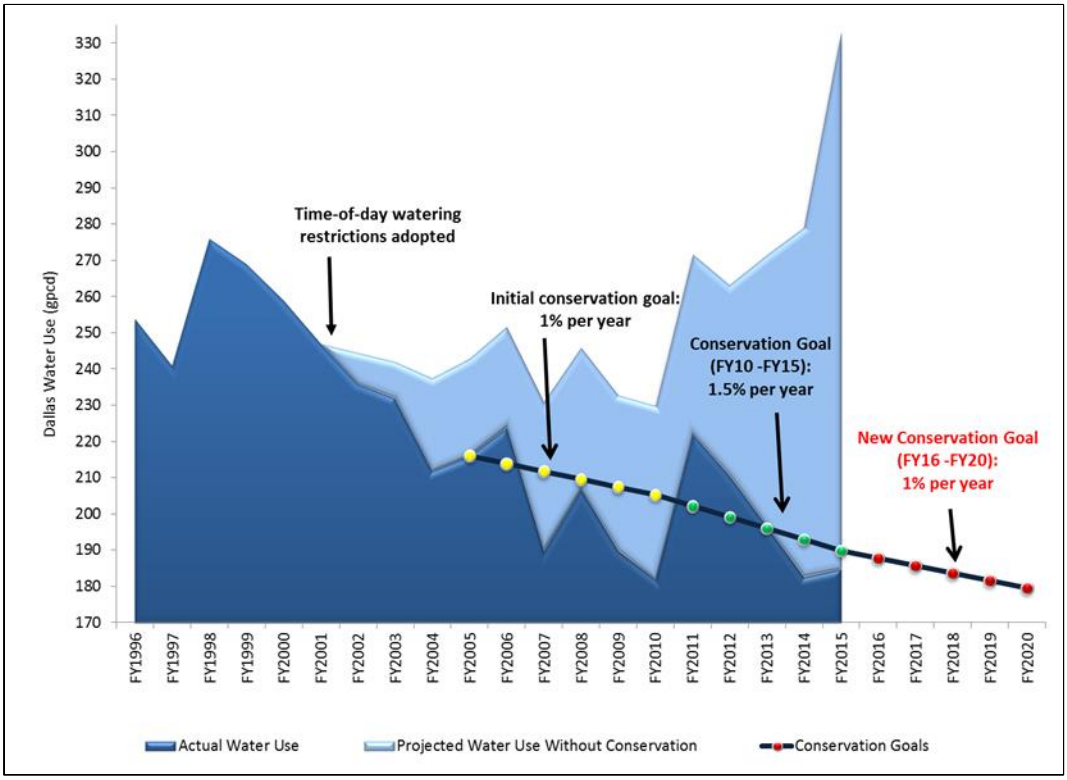
City of Dallas

Water Conservation Five-Year Work Plan

April 2016

City of Dallas Water Utilities
www.savedallaswater.com

Figure 3-1: Per Capita Water Consumption Goal, FY 2016 through FY 2020



3.1 Water System Improvements

Measures in this category are designed to impact the annual average of 22.1 BG in unbilled water use that is comprised of:

- Unbilled Water Loss
- System Maintenance (flushing, meter testing and sewer cleaning)
- Treatment Plant Process Water
- Main Breaks
- Maintenance on storage facilities
- Fires and fire training
- Unbilled municipal uses

Apparent Losses

Apparent losses, sometimes referred to as commercial losses, occur when water that should be included as revenue generating water appears as a loss due to unauthorized actions or calculation errors. Unauthorized consumption, meter inaccuracies, and data handling errors are discussed in the following sections.

Unauthorized Consumption

Unauthorized Consumption is water that is removed from the system without authorization and generally without DWU's knowledge. According to the EPA, unauthorized consumption includes water theft, illegal meter by-passes, vandalism, or un-metered hydrant use for construction or recreation. The amount of water involved is very difficult to estimate because by its nature, the water use is unknown to DWU.

A small portion of unauthorized consumption is the loss of water due to theft. Currently, the DWU Water Delivery Program is developing methods in which to reduce water theft. However, this is a difficult process - it only takes a would-be offender a few moments to illegally hook a tanker truck to a fire hydrant, steal several hundred or a thousand gallons of water, and be on their way. Efforts have been made to regularly spot check tanker trucks and these efforts are reducing the amount of theft within the system. The department has made progress by adding an inspector position for portable meter inspection.

Other areas where unauthorized consumption may occur are illegal meter by-passes or when someone removes or tampers with the metering mechanism inside a meter thereby allowing water to flow through the meter without being measured. If evidence of a by-pass or tampering is found, the offender is issued a citation, an estimate of the amount of water involved is determined and a bill is subsequently issued to the property owner. DWU is evaluating the feasibility of conducting a study to determine if additional measures are warranted.

Customer Meter Accuracy and Meter Exchange

A major part of DWU's operations involve the repair and replacement of water meters. Review of data and interviews with Meter Operations Division staff indicate that a significant amount of work is being implemented to improve meter accuracy. DWU operates meter testing facilities for large and small meters, maintains an electronic catalogue of meters both in service and in the warehouse, and conducts ongoing repairs. Currently, all service work, meter replacements, and new installations are conducted by city staff.

Over the past fifteen years, the following processes have been implemented to improve meter accuracy:

- Replacement of any meter older than 15 years
- Replacement of traditional meters with Automated Meter Reading (AMR) / Advanced Metering Infrastructure (AMI) ready meters
- Re-alignment of staff in the Large Meter Division to enhance Quality Assurance in Large Meter testing and rebuilding

As water meters age, their internal mechanisms begin to deteriorate which can lead to lower measurements. An aging meter will likely become an economic liability with potential for revenue losses. A comprehensive meter replacement program not only benefits the water distribution system by creating a more efficient operation, it also allows the city to more fully recover its revenues.

As of September 30, 2015, DWU maintained 329,578 water meters. Of these, 274,421 were residential meters, 53,457 commercial meters, 1,612 municipal meters, and 88 Optional General Services meters. The current average age of small meters within the DWU system is approximately 7.3 years.

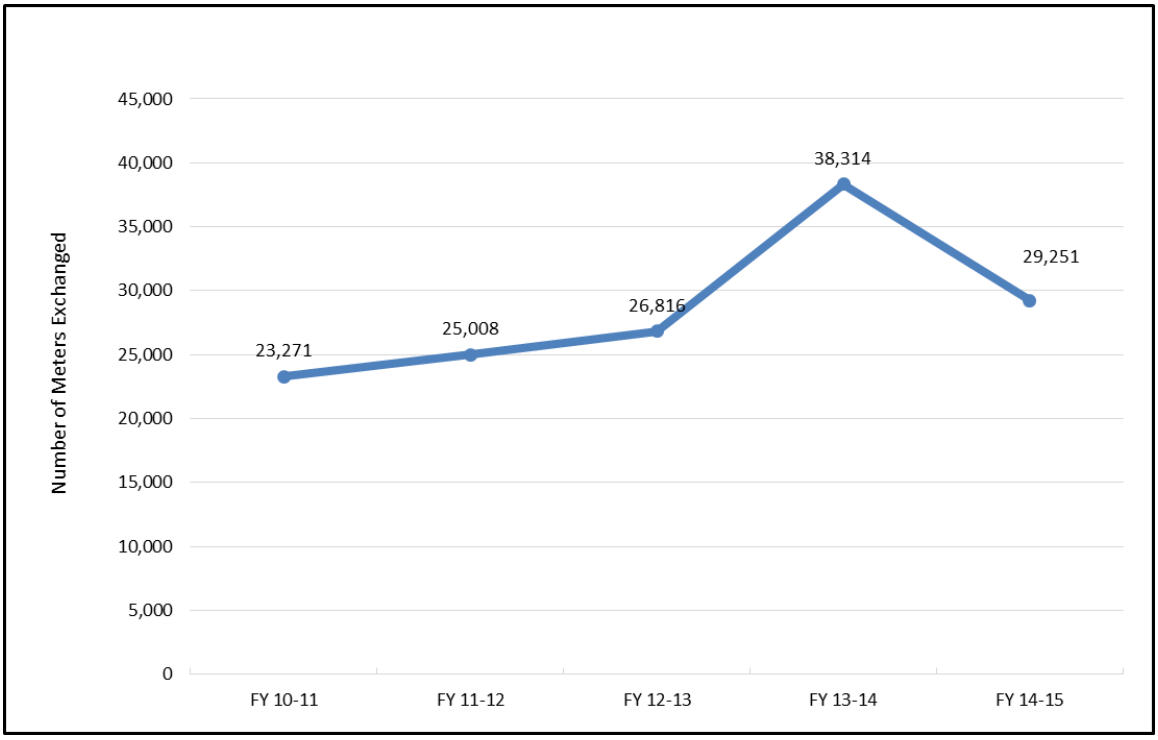
According to a recent engineering study, when a small meter reaches about 15 years old, the ability to accurately report water usage is diminished by approximately 10%[7]. By replacing meters at DWU's current rate, the system is reporting water usage numbers with less than a 4% loss.

As a policy, large meters (three-inch diameter and larger) are tested at least annually, and the highest-use meters are tested as often as every six months. Large meters are generally flow tested in situ (without removing the customer meter) using a Sensus W1250™ portable large meter tester. These portable testers are used to test flows up to five hundred gallons per minute. There are approximately 6,800 large meters, including 3,300 industrial meters and 3,500 detector check meters, which allow priming of fire sprinkler systems while metering any low flows into a customer's fire control system.

DWU maintains a staff of 54 employees and 10 Supervisors in the Small Meters Section that are able to completely maintain all of the small water meters in the DWU system. In the Large Meter Section, DWU maintains a staff of 10 – two employee crews and 2 crew leaders that are able to field repair and test large meters.

DWU has a policy of exchanging a meter if its accuracy rating in the field cannot be determined. It is more cost effective to exchange a questionable meter with a newly certified one than it is to pull a meter, refurbish it, and return it to the customer site. **Figure 3-2** reflects the number of meters that have been exchanged over the past 5 years.

Figure 3-2: Meter Exchange Rate within DWU

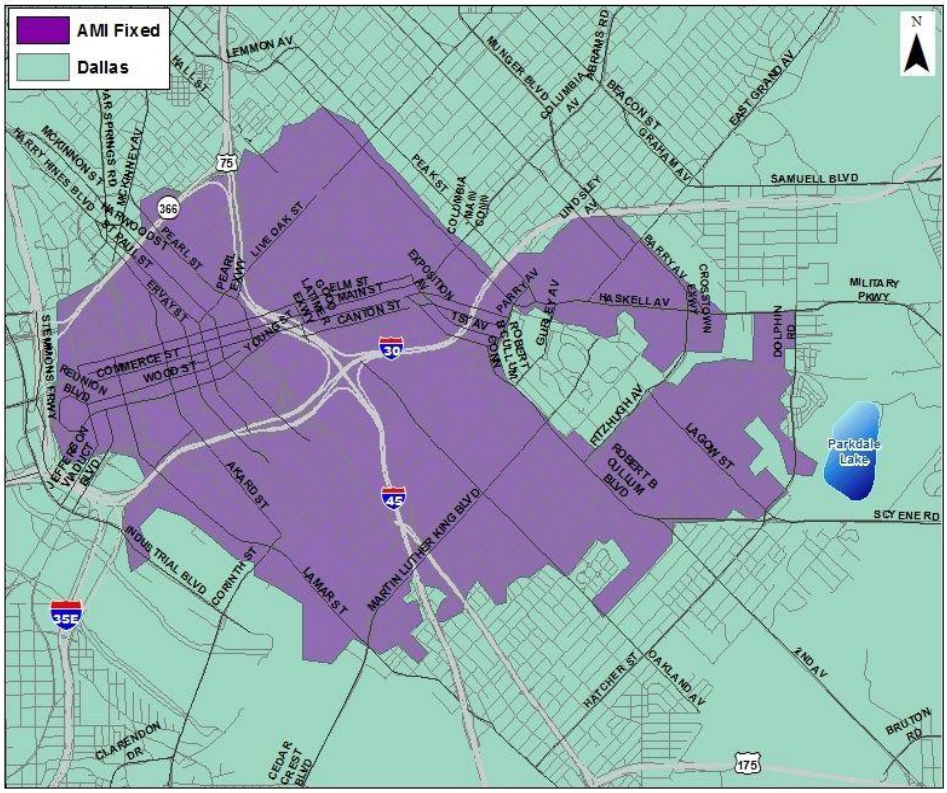


[7] *Final Water Meter Review and Testing Phase Two, for the City of Dubuque, IA*. HDR Engineering, Inc. March, 2009. Exhibit C; Table 5-1, Page 11. 1/30/2015: http://www.cityofdubuque.org/DocumentCenter/Home/View/1945

Meter Reading Using Advanced Technology

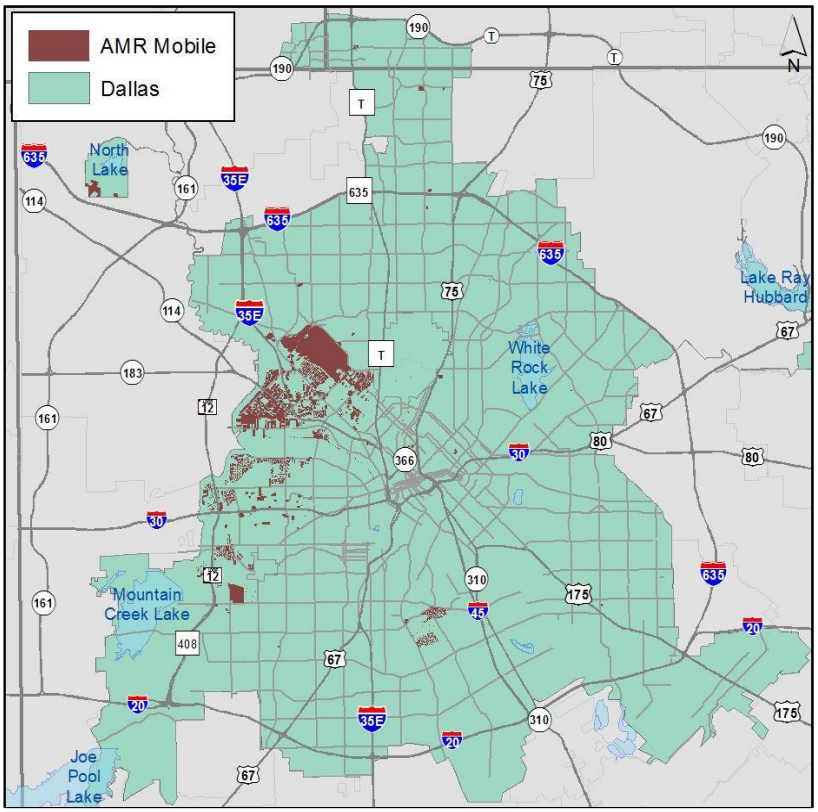
Prior to FY 2009, DWU meters were read manually utilizing a touchpad device. In FY 2009, DWU launched a pilot project to begin the modernization of its meter reading process. The AMI Fixed Network was deployed in the Central Business District, Deep Ellum and Fair Park. Approximately 7,000 meters are currently being read through the AMI Fixed Network as depicted in **Figure 3-3**.

Figure 3-3: City of Dallas AMI Fixed Network System



In FY 2014, the modernization process was enhanced with the deployment of the AMR Mobile Network. AMR Mobile Network units are installed in sections of West Dallas, Cypress Waters and some controlled access properties. Approximately 15,700 meters are currently being read through AMI Mobile technology as depicted in **Figure 3-4**.

Figure 3-4: City of Dallas AMR Mobile Network System



At the beginning of FY 2015, approximately 65,130 meters had been replaced with AMR/AMI ready meters. There are approximately 265,400 traditional meters remaining in the system. At the current rate of exchange (approximately 38,000 meters annually), the entire DWU system could be fully AMR/AMI ready in about 5 years.

DWU's effort to replace all exchanged meters with newly tested and certified AMR/AMI ready meters should result in greater accuracy of its water sales (at least to within 2-3%). This should minimize apparent losses from metering inaccuracies within the entire system.

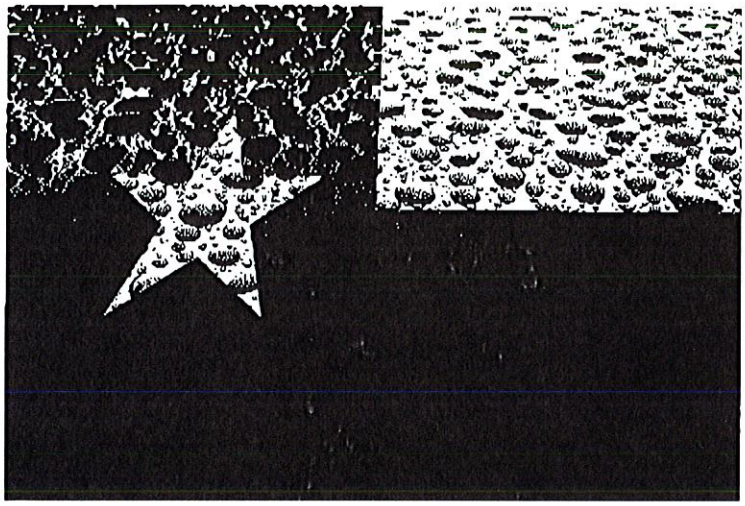
It is recommended that DWU continue to procure and install the AMI infrastructure. Field deployment should be performed over a five-year period using a phased-in approach. For example, Phase I could include installation of endpoints and a communication grid on existing AMI ready meters. Phases II and III could include the installation of AMI meter endpoints (route by route).

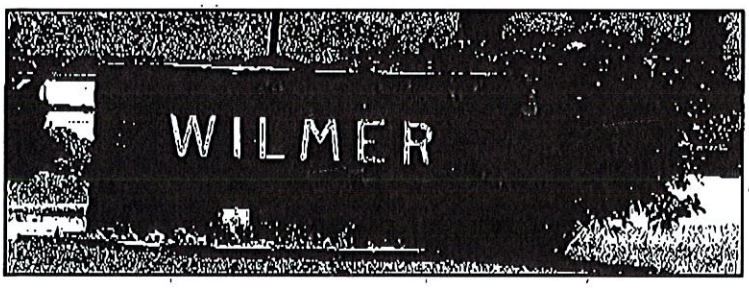
An active AMR/AMI ready meter has the ability to broadcast meter readings (water usage) in time increments as small as every 15 minutes or less. Ultimately, having a system that is AMR/AMI capable will reduce the cost of meter reading and provide timely water usage data to improve:

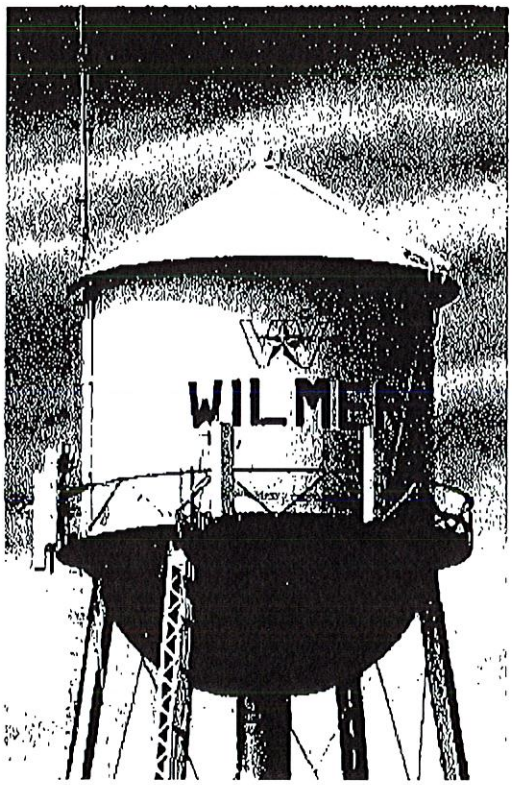
- Customer service
- Water planning
- System modeling and pressure zone management
- Water Conservation
- Enforcement Efforts

0570018 V

RECEIVED
MAR 07 2017
DFW REGION-4







DROUGHT CONTINGENCY PLAN

WATER CONSERVATION 2016

Strategic outline of response measures necessary to address Emergency Water Management, while continuing to educate the community about the importance and benefits of water conservation.

- Intensify normal leak detection and repair activities on water pipes and mains
- City staff will begin review of the problems which initiated Stage 1 actions
- Notify major water users and work with them to achieve voluntary compliance with water use reduction

Actions: Specific actions taken during any drought situation will be determined by the City Administrator. The City Administrator may also take other actions not listed, if deemed necessary.

Triggering Criteria: The City of Wilmer purchases 100% of its potable water from the City of Hutchins. Wilmer has implemented its Drought Contingency Plan, and in doing so, is following the same emergency water management triggering criteria as the City of Dallas:

- Water supplies are low
- Water demand approaches system capacity
- Short-term deficiencies limit supply capability
- Contamination

Termination Criteria: All initiated actions will remain in effect until the conditions which triggered Stage 1 have been alleviated.

Stage 2: Severe Drought Conditions

Goal: Enforce "Water Watch" restrictions within the community. This program aims to reduce overall water consumption by 10% reduction in total gallons per capita per day.

Triggering Criteria: The City of Wilmer purchases 100% of its potable water from the City of Hutchins. Therefore, the emergency water management triggering measures will be the same as those of the City of Dallas. Mandatory water awareness may be triggered by any one of the following:

- **Water supplies are low.** Total raw water supply in connected lakes or the western or eastern reservoirs has dropped below 55% (45% depleted) of DWU's share of the total conservation storage.
- **Water demand approaches system capacity.** Water demand has reached or exceeded 90% of delivery capacity for 3 consecutive days.