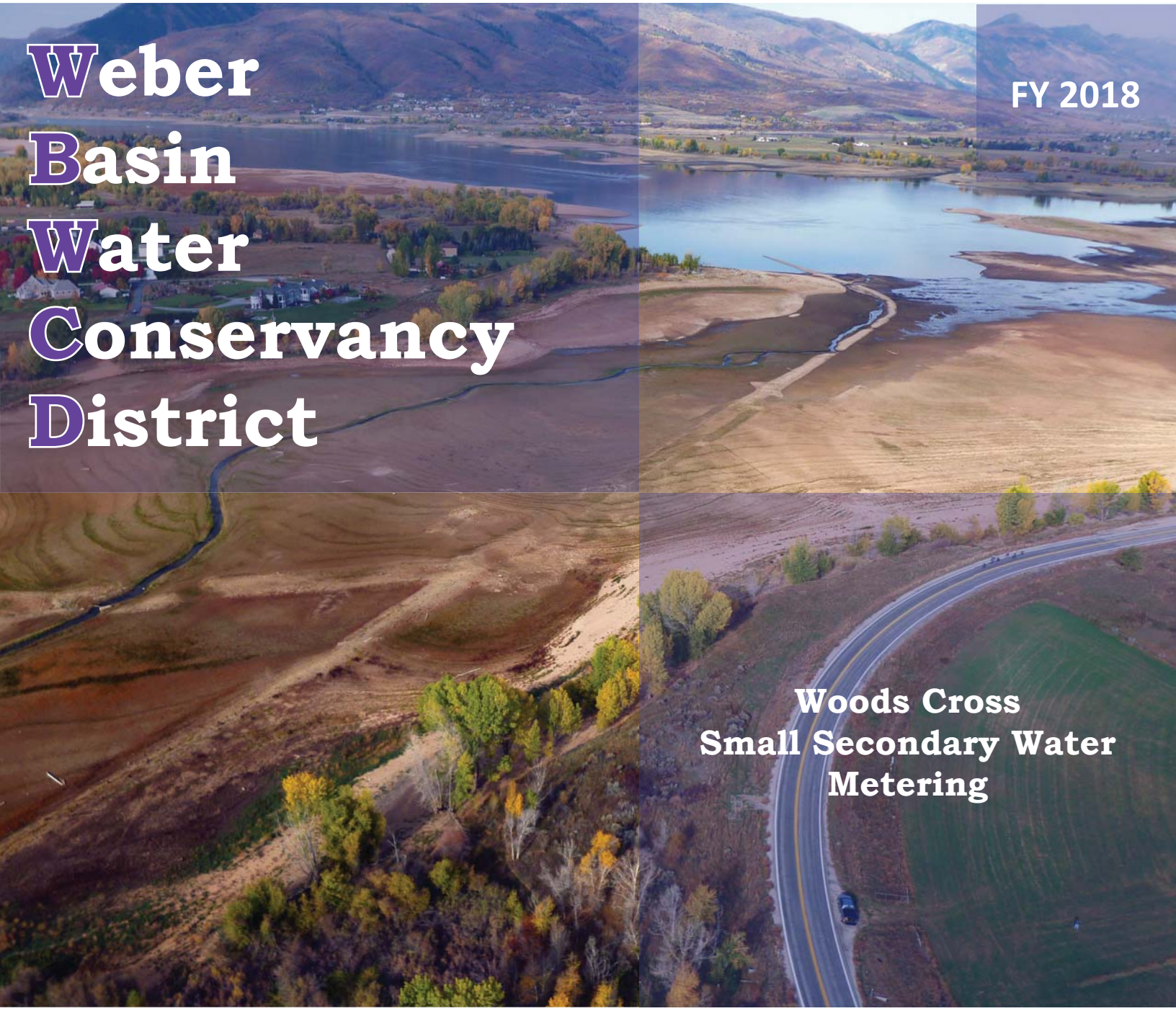
WaterSMART Grants: Water and Energy Efficiency Grants
FOA# BOR-DO-18-F006



Weber Basin Water Conservancy District

FY 2018

Woods Cross Small Secondary Water Metering

Applicant

Weber Basin Water Conservancy District
2837 East Highway 193
Layton, Utah 84040

Project Manager

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Executive Summary

Applicant Info

Date: May 10, 2018

Applicant Name: Weber Basin Water Conservancy District (WBWCD)

City, County, State: Layton City, Davis County, Utah

Project Manager:

Derek Johnson
Project Manager/Engineer, WBWCD
Phone - 801-771-1677 Email - djohnson@weberbasin.com

Project Funding Request: Funding Group I $300,000; Total Project Cost $750,000

Project Summary

Specify the work proposed, including how funds will be used to accomplish specific project activities and briefly identifies how the proposed project contributes to accomplishing the goals of this FOA.

Weber Basin Water Conservancy District's Woods Cross Secondary Water Metering Project will install 750 secondary water meters. This project will have a quantifiable sustainable water savings of 300 acre-feet, and improved energy efficiency by reducing 64,690 kW-hr in energy used for pumping.

The Woods Cross Secondary Water Metering Project is the continuation of Weber Basin's commitment to achieve the Utah Governor's goal of 25 percent water conservation by 2025. In 2008, Weber Basin began metering its approximately 18,000 secondary connections, and to date, they have installed an estimated 7,000 meters with plans to continue installing additional meters this year. The meters within this project will be located in WBWCD's Woods Cross secondary service area; an area where they are experiencing a lowering of the groundwater from pumping and the effects of multiple years of extreme drought.

The proposed project will contribute to the goals of this FOA in the following ways:

- **Water Reliability:** The installation of secondary water meters and significant public involvement and conservation education that WBWCD will initiate in the Woods Cross service areas will encourage users to manage and conserve water resources more efficiently. The increased awareness among residential water users on how they can develop sound water use habits and evaluate their water use through monthly meter information will contribute to better water reliability in their communities.
- **Mitigate Conflict:** The ability to reduce the pumping of groundwater in the Woods Cross area will reduce future conflict that could happen with the loss of groundwater in the area. Largescale ground-water withdrawals from a number of public and private wells in this densely populated area, could create problems associated with declining ground-water levels and conflicts among the many water-right owners. Through metering, water use awareness education, and conservation, WBWCD and local water users will work together to reduce water usage and groundwater pumping.

Length of Time and Estimated Completion Date

State the length of time and estimated completion date for the proposed project.

This project is ready to move forward as soon as it is awarded. An environmental document will be prepared as part of the project, and it is anticipated that a Categorical Exclusion will be approved based on the fact that the project will take place in previously disturbed areas and within existing road alignments. The environmental document will take two to six months. The installation of the meters will take 12 to 24 months and will take place during the fall through spring months (January 2019 – April 2019, October 2019 - April 2020). The education and information process will be ongoing with regular public information regarding the time and placement of the meters throughout the entire project. The following estimated project schedule shows the stages and duration of the proposed work, including yearly funding, major tasks, milestones, and dates:

SCHEDULE	Sept –Dec 2018	Jan – March 2019	April – May 2019	June – Sept 2019	Oct – Dec 2019	Jan – March 2020	April – May 2020	June – Sept 2020
Milestone/Task								
Sign WaterSMART contracts								
Environmental Document prepared and approved by Reclamation								
Metering Project Installation Year 1								
Metering Project Installation Year 2								
Final reporting and project close-out								

Federal Facility

Whether or not the project is located on a Federal facility.

In 1949, the Unites States Congress authorized the Weber Basin Project (Project), which was a U.S. Bureau of Reclamation (Reclamation) project aimed at developing and effectively utilizing the available water resources within the Weber River Basin Drainage. The Weber Basin Water Conservancy District was subsequently created in June of 1950 by a decree of the Second District Court of Utah and under the guidelines of the Utah Water Conservancy Act. The District is the operating agency for the Weber Basin Project and is responsible for the sale and delivery of project water, operation and maintenance of project facilities and is contracted with the U.S. Government for repayment of reimbursable costs of the Project.

Background Data

WBWCD is one of Utah's largest secondary water retailers and provides wholesale water to many retail water agencies across the Wasatch Front. The WBWCD secondary service areas include Centerville, Farmington, North Layton and South Layton, Uintah Bench (which includes parts of South Ogden, Ogden, and Washington Terrace), West Bountiful, West Haven, and Woods Cross.

Water resources in the area were extensively developed before initiation of the Weber Basin Project. Numerous private developments antedate the Federal projects. Prior federal Reclamation developments include the Weber River Project on the main stem of the Weber River and the Ogden River Project on the Ogden River. Also, as part of the Weber River and Ogden River Projects, water is diverted from the high reaches of the Weber River for multiple uses on the Provo River. The Weber Basin Project supplements all of the previous undertakings, and its operation is correlated with users in approaching the full practicable development of the area's water resources. Water is delivered from the Weber River to the District via two aqueducts.

Photo 1 East Canyon Water Treatment Plant

The Weber Aqueduct conveys irrigation water to lands on the Uintah Bench, and municipal and industrial water to Ogden and adjacent communities in Weber County. Part of the irrigation water is pumped to parcels above the aqueduct, and the remainder is delivered by a gravity pressure distribution system. At the terminal of the aqueduct, water is delivered to the District's Weber South Water Treatment Plant (WTP) from which it is treated then distributed to Ogden City and surrounding communities (an approximate population of 240,000 people).

Photo 2 Little Mountain Water Tank

The Davis Aqueduct extends to the south from the Weber Canyon along the foot of the Wasatch Mountains to North Salt Lake City. Part of the water is pumped for irrigation of lands above the aqueduct; the remainder of the water is sold by the District to irrigation companies, Improvement Districts, Sub-conservancy Districts and individual landowners. The remaining water is processed through the District's Davis North Water Treatment Plant for distribution to communities in North Davis County and through the Davis South Water Treatment Plant for communities in the south end of Davis County – combined communities of approximately 300,000. A large block of treated and untreated industrial water is also delivered to the several oil refineries in the extreme south end of Davis County.

In addition to surface water distribution, twenty-one deep wells relieve water shortages in dry periods and to meet peak water demands. Streams flowing from the face of the Wasatch Mountains toward the Great Salt Lake contribute small quantities of water for project use. The Ogden Valley Canal distributes Ogden River water to mountain valley lands near Huntsville and Eden.

Within the District's service area, there may exist the largest number of retail secondary water connections in the United States. The District has approximately 18,000 individual connections that are operated and maintained by the District, with many other irrigation companies having tens of thousands of residential connections in their own retail areas throughout Davis and Weber Counties. These secondary connections are a great asset to the residents they serve, however, there is little incentive to conserve because secondary water has been primarily unmetered, resulting in users not having known how much water they actually use. This is why the metering of these connections is so cost effective and beneficial in the reduction of overall per capita use and the extension of existing water supplies.

Source of water supply and water rights involved.

Table 1Water Rights Information

Source	Maximum Yield (AF)	Reliable Yield (AF)
Project Stored Water	400,378	**206,914**
District Stored Water	12,917	**12,917**
Wells (both District and Project)	74,420	**37,210**
Stock Water	21,321	**17,056**
Decreed Water Rights	3,960	**3,168**
Totals:	**512,996**	**277,265**

Current water uses and number of water users served.

Currently, District-administered water contracts totaled 225,714 acre-feet, with 90,154 acre-feet categorized as municipal and industrial (M&I) water, and the remaining 135,560 acre-feet categorized as irrigation. WBWCD serves a geographic area over 2,500 square miles, with five principle water uses:

1. **Wholesale Irrigation**: wholesale water is supplied to a number of irrigation suppliers along the Wasatch Front. These organizations then retail water to customers in their respective service areas. This use accounts for approximately 36 percent of the District's water contracts.
2. **Groundwater Replacement**: various drinking water purveyors and individuals (either residential or agricultural) with a water contract, which is then used in an exchange application to obtain approval from the State Engineer to drill a groundwater well to meet water supply needs. This use accounts for nearly 9 percent of WBWCD contracts currently.
3. **Retail Secondary Irrigation**: WBWCD provides residential customers with irrigation water in Davis and Weber counties via 211 miles of pipelines. This use accounts for

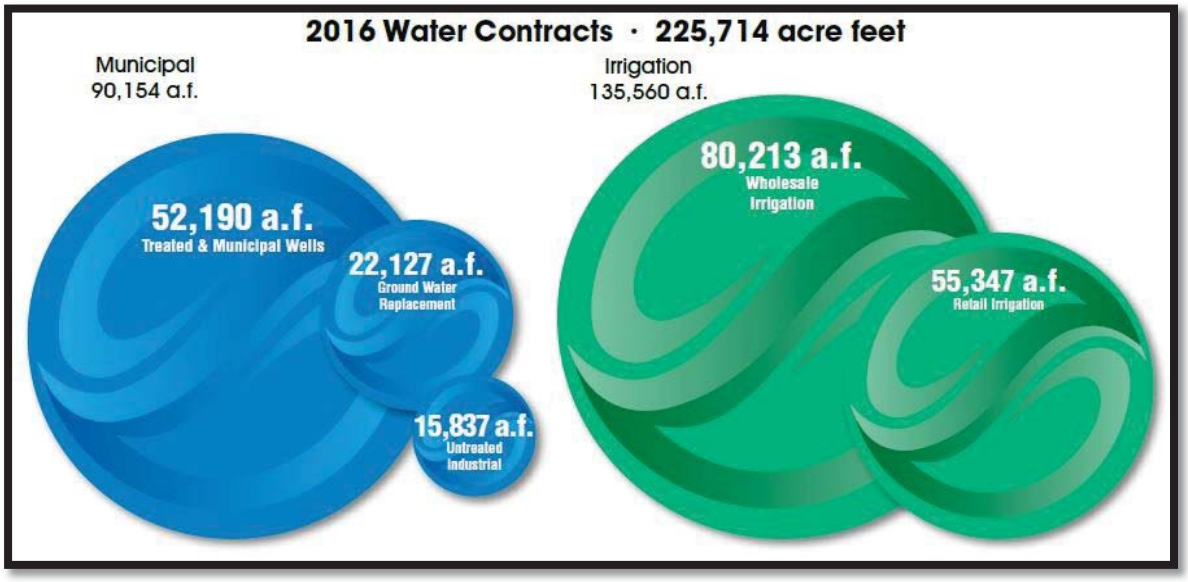
roughly 25 percent of water contracts. They also deliver irrigation water to many irrigators and farmers in Box Elder, Davis, Morgan, Summit, and Weber Counties.

4. **Treated Municipal Water**: The District wholesales culinary water to nearly 50 cities and water improvement districts in Davis and Weber Counties via 69 miles of transmission lines. This use accounts for approximately 23 percent of the District's contracts.
5. **Untreated Industrial Water**: This use accounts for about 7 percent of the District's Contracts.

Current and projected water demand/potential shortfalls in water supply.

As of 2016, existing contracts obligated 83 percent of the District's reliable yield supply. Current population projections for the District's service area show the population nearly doubling between 2010 and 2060 (575,500 to 1,011,800). As this growth takes place, additional water supply will be necessary to meet anticipated demands even with the conservation goals of 25 percent reduction in per capita use by 2025 and 35 percent conservation by 2050 when compared with the year 2000 per capita use. Increased conservation will be critical, and metering secondary connections as proposed in this project is one of the highest priorities of the District.

Figure 1 WBWCD Water Contracts



If water is primarily used for irrigation, describe major crops and total acres served.

Water use in the Woods Cross service areas is primarily municipal, used on lawns and gardens. In some cases, the secondary system has been used to irrigate row crops and pastures.

Water Delivery System

Describe the applicant's water delivery system as appropriate.

Delivery System: In addition to the summary in Figure 2 below, WBWCD receives 5,000 acre-feet from Echo Reservoir that was acquired as part of the Weber Basin Project. They have also acquired 1,357 acre-feet of Weber River Stock in Echo. See Attachment A – WBWCD Delivery System Information.

Pressurized Secondary System: The District has approximately 18,000 individual connections that are operated and maintained by the WBWCD. There are many other irrigation companies

having tens of thousands of residential connections that are serviced by WBWCD wholesale water throughout Davis and Weber Counties. Within the District's service area, there are over 100,000 plus secondary irrigation connections.

Energy Efficiency

If the application includes hydropower or energy efficiency elements, describe existing energy sources and current energy uses.

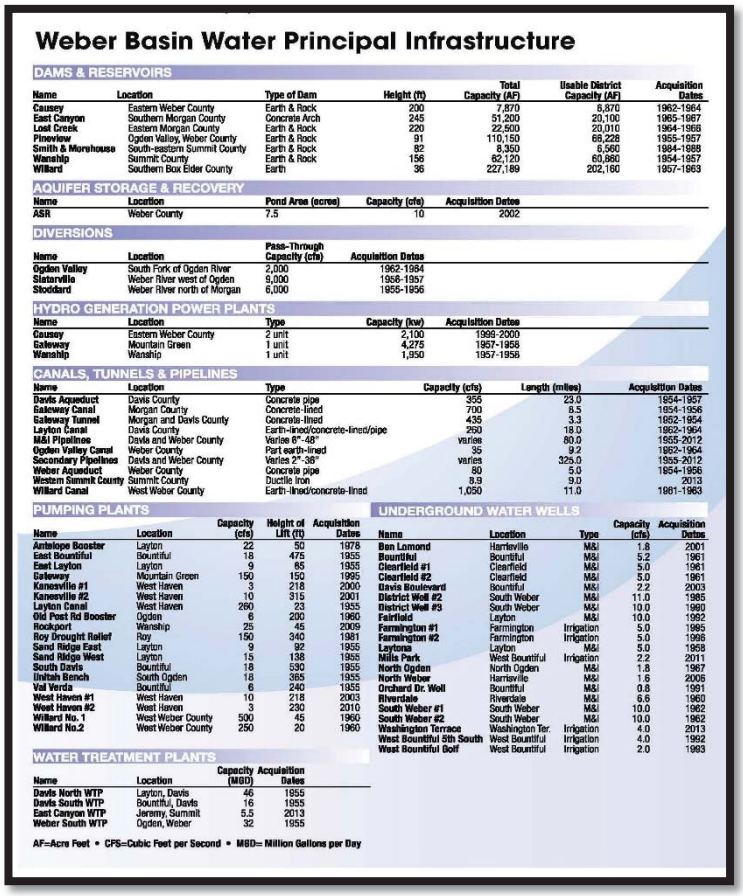
The proposed project will reduce water usage and therefore reduce pumping on the Mills Park Well. The estimated energy saved by reducing pumping is anticipated to be 64,690 kW-hr.

Relationship with Reclamation

Identify any past working relationships with Reclamation. This should include the date(s), description of prior relationships with Reclamation, and a description of the project(s).

WBWCD has collaborated with Reclamation on a number of recently completed and ongoing cooperative projects, including:

Figure 2 System Information



Weber Basin Water Principal Infrastructure

DAMS & RESERVOIRS

Name	Location	Type of Dam	Height (ft)	Total Capacity (AF)	Usable District Capacity (AF)	Acquisition Dates
Causey	Eastern Weber County	Earth & Rock	200	7,870	6,870	1962-1964
East Canyon	Southern Morgan County	Concrete Arch	245	51,200	20,100	1965-1967
Lost Creek	Eastern Morgan County	Earth & Rock	220	22,500	20,010	1964-1966
Pineview	Ogden Valley, Weber County	Earth & Rock	91	110,150	68,228	1955-1957
Smith & Morehouse	South-eastern Summit County	Earth & Rock	82	8,350	6,560	1984-1988
Wanship	Summit County	Earth & Rock	156	62,120	60,880	1954-1957
Willard	Southern Box Elder County	Earth	36	227,189	202,160	1957-1963

AQUIFER STORAGE & RECOVERY

Name	Location	Pond Area (acres)	Capacity (cfs)	Acquisition Dates
ASR	Weber County	7.5	10	2002

DIVERSIONS

Name	Location	Pass-Through Capacity (cfs)	Acquisition Dates
Ogden Valley	South Fork of Ogden River	2,000	1962-1984
Slaterville	Weber River west of Ogden	9,000	1956-1957
Stoddard	Weber River north of Morgan	6,000	1955-1956

HYDRO GENERATION POWER PLANTS

Name	Location	Type	Capacity (kw)	Acquisition Dates
Causey	Eastern Weber County	2 unit	2,100	1999-2000
Gateway	Mountain Green	1 unit	4,275	1957-1958
Wanship	Wanship	1 unit	1,950	1957-1958

CANALS, TUNNELS & PIPELINES

Name	Location	Type	Capacity (cfs)	Length (miles)	Acquisition Dates
Davis Aqueduct	Davis County	Concrete pipe	355	23.0	1954-1957
Gateway Canal	Morgan County	Concrete-lined	700	8.5	1954-1956
Gateway Tunnel	Morgan and Davis County	Concrete-lined	435	3.3	1952-1954
Layton Canal	Davis County	Earth-lined/concrete-lined/pipe	260	18.0	1962-1964
M&I Pipelines	Davis and Weber County	Varies 6"-48"	varies	80.0	1955-2012
Ogden Valley Canal	Weber County	Part earth-lined	35	9.2	1962-1964
Secondary Pipelines	Davis and Weber County	Varies 2"-36"	varies	325.0	1955-2012
Weber Aqueduct	Weber County	Concrete pipe	80	5.0	1954-1956
Western Summit County	Summit County	Ductile Iron	8.9	9.0	2013
Willard Canal	West Weber County	Earth-lined/concrete-lined	1,050	11.0	1961-1963

PUMPING PLANTS

Name	Location	Capacity (cfs)	Height of Lift (ft)	Acquisition Dates
Antelope Booster	Layton	22	50	1976
East Bountiful	Bountiful	18	475	1955
East Layton	Layton	9	65	1955
Gateway	Mountain Green	150	150	1995
Kaysville #1	West Haven	3	218	2000
Kaysville #2	West Haven	10	315	2001
Layton Canal	West Haven	260	23	1955
Old Post Rd Booster	Ogden	6	200	1960
Rockport	Wanship	25	45	2009
Roy Drought Relief	Roy	150	340	1981
Sand Ridge East	Layton	9	92	1955
Sand Ridge West	Layton	15	138	1955
South Davis	Bountiful	18	530	1955
Unitah Bench	South Ogden	18	365	1955
Val Verda	Bountiful	6	240	1955
West Haven #1	West Haven	10	218	2003
West Haven #2	West Haven	3	230	2010
Willard No. 1	West Weber County	500	45	1960
Willard No.2	West Weber County	250	20	1960

UNDERGROUND WATER WELLS

Name	Location	Type	Capacity (cfs)	Acquisition Dates
Ben Lomond	Harrisville	M&I	1.8	2001
Bountiful	Bountiful	M&I	5.2	1961
Clearfield #1	Clearfield	M&I	5.0	1961
Clearfield #2	Clearfield	M&I	5.0	1961
Davis Boulevard	Bountiful	M&I	2.2	2003
District Well #2	South Weber	M&I	11.0	1985
District Well #3	South Weber	M&I	10.0	1980
Fairfield	Layton	M&I	10.0	1992
Farmington #1	Farmington	Irrigation	5.0	1995
Farmington #2	Farmington	Irrigation	5.0	1996
Laytona	Layton	M&I	5.0	1958
Mills Park	West Bountiful	Irrigation	2.2	2011
North Ogden	North Ogden	M&I	1.8	1967
North Weber	Harrisville	M&I	1.6	2005
Orchard Dr. Well	Bountiful	M&I	0.8	1991
Riverdale	Riverdale	M&I	6.6	1960
South Weber #1	South Weber	M&I	10.0	1962
South Weber #2	South Weber	M&I	10.0	1962
Washington Terrace	Washington Ter.	Irrigation	4.0	2013
West Bountiful 5th South	West Bountiful	Irrigation	4.0	1992
West Bountiful Golf	West Bountiful	Irrigation	2.0	1983

WATER TREATMENT PLANTS

Name	Location	Capacity (MGD)	Acquisition Dates
Davis North WTP	Layton, Davis	46	1955
Davis South WTP	Bountiful, Davis	16	1955
East Canyon WTP	Jeremy, Summit	5.5	2013
Weber South WTP	Ogden, Weber	32	1955

AF=Acre Feet • CFS=Cubic Feet per Second • MGD= Million Gallons per Day

- Title XVI Reuse Feasibility Study 2017: This study will allow the WBWCD to evaluate and collaborate with five wastewater treatment facilities within the District on ways to help develop greater resiliency and diversity of their water portfolio.
- The Secondary Water Metering, Fish Passage, and Solar Array/Hydro Project 2017: This project received full funding through the 2017 WaterSMART program. The project is in the process of being completed and will install 2,365 meters and upsize a hydro unit at the Causey Dam; estimated to be completed in September 2020.
- WaterSMART Small-Scale Water Efficiency Project FY 2017 – WBWCD Culinary Meters Project. This project will install new metering equipment on water transmission mains to all ow to an Automated Metering Infrastructure System (AMI).
- Drought Contingency Plan 2016: This planning project received partial funding to help develop a drought plan for the entire District.
- The Secondary Water Meter Project: This project, which received partial funding through the 2016 WaterSMART program, is in the process of being completed with the installation of 1000 meters.
- Phase 3 Upper Willard Canal Lining and Water Marketing Project: This project, which received partial funding through the 2013 WaterSMART program, has been completed.

- Phase 2 Upper Willard Canal Lining and Water Marketing Project: This project, which received partial funding through the 2012 WaterSMART program, has been finalized.
- Phase 1 Upper Willard Canal Lining and Water Marketing Project: This project, which received partial funding through the 2011 WaterSMART program, has been completed.
- The Layton Canal Lining and Water Marketing Project: This project, which received partial funding through the 2010 WaterSMART program, has been completed.
- The first Secondary Water Meter Project: This project, which received partial funding through the 2010 WaterSMART program, has been completed with the installation of 1000 meters.
- System Trunk-line Meter Project: Completed in 2009, this project involved installation of large meters and provides information for the water deliveries through the many of the large lines that service portions of the District's retail secondary water system.
- System Optimization Review (SOR) was completed in 2008. This project evaluated the efficiencies of the District's entire water storage and distribution system.
- Weber River Basin Aquifer Recharge Water Bank: This project, which was completed in 2009, received partial funding through the 2007 Water 2025 program.
- Gateway Canal Landslide Stabilization Projects: This is an ongoing collaboration.

Project Location

Provide specific information on the proposed project location or project area including a map showing the geographic location.

Geographic Location

The Woods Cross Secondary Water Metering Project is located in Davis County ten minutes north of Salt Lake City. The secondary metering project will take place west of I-15 within Woods Cross City. This is a growing community that serves as suburban type area. For project location and detailed project info, see Attachment B – Project Location Map, and Attachment C – Project Detail Map.

Technical Project Description

Describe the work in detail, including specific activities that will be accomplished. This description shall have sufficient detail to permit a comprehensive evaluation of the proposal.

The District currently has a total of approximately 18,000 secondary connections. In 2008, WBWCD began metering secondary connections, and to date, they have installed about 7,000 meters with plans to continue installing additional meters this year. The goal is to have all secondary connections on the District system metered so that users can be more accountable for the water they use. The meters are equipped with endpoints that allow hourly data to be

collected using a drive-by reader or a fixed network Advanced Metering Infrastructure (AMI) system that allows continuous data collection. The Wood Cross secondary service area is primarily served by the 18.8 Trunkline off of the Davis Aqueduct, which is part of the USBR's Weber Basin Project. The Woods Cross service area is also served by three irrigation wells: West Bountiful Golf Course Well, 500 South Well and the Mills Park Well.

In recent years, the District primarily relied on the Mills Park Well for needed well water in the area in addition to the South Davis Trunkline which provides approximately 90 – 95 percent of the water to the Woods Cross secondary service area. The water saved from the proposed project will allow the District to reduce the run-time of the wells in the area, which will benefit the local aquifer conditions and save a significant amount of energy. Therefore, significant energy savings will be realized along with water savings. It is anticipated that energy savings from reduced pumping will be 64,690 kW-hr per year.

Alongside the significant energy saving comes an important sustainability element to the groundwater in the area. It should be noted that there are a number of wells in the area pumping water for culinary uses that belong to surrounding cities, and other wells pumping for environmental reasons. Largescale ground-water withdrawals from a number of public and private wells in this densely populated area, create problems associated with declining ground-water levels and conflicts among the many water-right owners. All of these wells, along with the extended drought situation, are having an effect on the groundwater of the area. Every bit of water savings can affect the groundwater. As secondary users use less water, they save other WBWCD wells from having to continually pump to provide secondary water.

The project includes activities that will conserve water through secondary water metering which includes installing 750 additional end user meters. These meters will be located in WBWCD's Woods Cross secondary service area. Similar to past meter installation projects, WBWCD will purchase the water meters and the AMR radio transmitters for the Project. Thus, it will reduce costs and properly correlate the meters to the appropriate address where they will be installed. Prior to any physical construction or disruption to individual yards, a public involvement information campaign will be organized to identify and inform all users who will be affected.

The District will also provide the time frame for installation and what benefits will come as a result of having an individual meter on their connection. The contractor will pass out door hangers prior to construction in any given area to inform homeowners of their presence in the areas where they will be working, and provide at least 48 hours lead time prior to installation on their parcel.

E.1. Technical Proposal: Evaluation Criteria

E.1.1. Evaluation Criterion A – Quantifiable Water Savings

Quantifiable Water Savings

Describe the amount of estimated water savings. For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

For this project, the amount of estimated water savings is 300 acre-feet/year. For the connections alone that are proposed to be metered approximately 765 acre-feet of water is delivered annually. The secondary irrigation water services for the entire service area, which includes Woods Cross

City and West Bountiful City, is 3,787 connections. However, only a small number of new service area connections are equipped with a meter.

Describe current losses. Explain where the water that will be conserved is currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?

Water is being overused on lawns, gardens, concrete sidewalks, and pastures and is mostly lost to evapotranspiration and evaporation. Excess watering can cause water to runoff the property and often is consumed by invasive plants like phragmites. In some cases, the secondary system has been used to irrigate row crops and pastures.

Describe the support/documentation of estimated water savings. Provide sufficient detail supporting how the estimate was determined, including all supporting calculations.

Estimated water savings was determined based on metered secondary use data from the Farmington service area (an area similar in soil types and lot sizes to the Woods Cross area). Secondary water use, on average for the Woods Cross, is 1.02 acre-feet per secondary connection, making the estimated secondary use of the proposed connections to be metered 765 acre-feet/year (750 x 1.02 = 765 acre-feet). The total water supply being considered for the proposed project is 765 acre-feet/year.

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.

It is estimated that the proposed project will conserve 300 AF/yr. Meter data from 2014 – 2017 has shown that secondary users in Farmington that have a secondary meter use significantly less water than those who are not metered at this time. Based on the available data (2014-2017) from existing metered end user connections in the Farmington service area, metered end user connections used on average 0.62 AF/connection/yr. During the same time period, un-metered secondary connections in Woods Cross are estimated to have used on average 1.02 AF/connection/yr. The 1.02 AF/connection/yr was calculated based on data from trunkline flow meters delivering water to the area. Figure 3 below shows the secondary water use by year for both metered and un-metered connections using the Farmington service area as the comparison. On average, metered secondary connections used 0.40 AF/Conn less than un-metered connections.

The District believes additional conservation is possible beyond the observed 0.40 AF/conn/yr if users continue to respond to the targets they are being given for appropriate use.

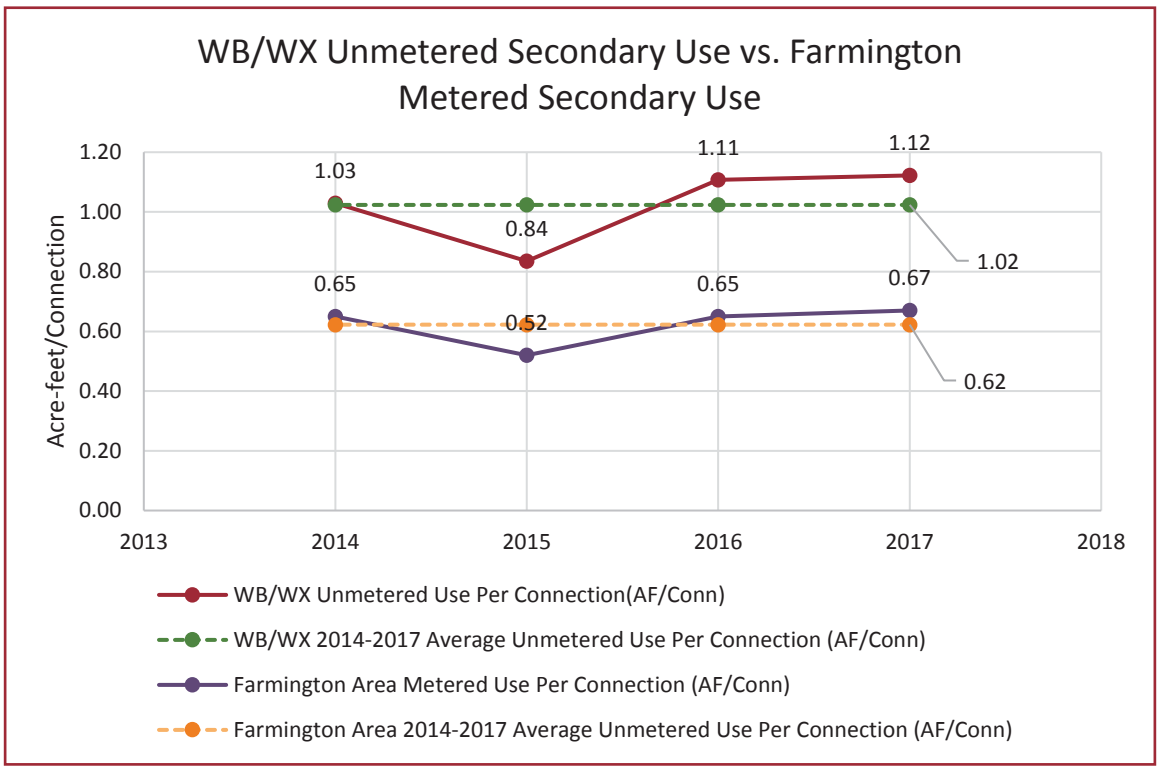
The following calculations show the anticipated water savings for the proposed meter project.
Calculation 1. Documented Water Use Reduction for Metered Secondary Connections in Woods Cross

1.02 AF/conn/yr – 0.62 AF/conn/yr = 0.40 AF/conn/yr Water Savings

Calculation 2. Anticipated Water Savings for Proposed Woods Cross Meters

750 new meters x 0.40 AF/conn/yr savings = 300 AF/yr.

Figure 3 Secondary Metered & Unmetered use Comparison



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

Water reductions for individuals in the proposed project are being based on actual 2012-2017 metered connection data that are located within the project area. As was shown in the above calculations, there is an impact from having a meter on a water connection and showing water users what they use. Without usage information from the meter, people assume they are using a reasonable amount of water. However, when the actual usage is known, coupled with help and information on proper landscape water needs, data shows that water use in metered areas has decreased. The calculation for how much each user can reduce usage is based on average use from what has been seen and recorded. However, it is believed that even greater savings can be achieved due to user demographics in remaining unmetered areas, parcel sizes, site locations and other factors that can play a role in high usage. WBWCD is confident that there will be substantial water savings with each new meter based on the historical data on meters already installed within the Weber Basin service area. Current distribution system losses are unknown in the Woods Cross area but because much of the system is newer development, distribution system losses are not expected to be a significant portion of unmetered use.

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.

All new subdivisions and new service connections to the District's system are now required to install individual meters, which accelerates WBWCD's goal of metering all service connections.

Data is available for all meters installed, but to have some consistency over time, the District used data from a group of 1,057 meters that have usage records from 2012-2017. Data was collected and compiled in hourly increments to analyze and determine the effectiveness of these 1,057 meters, during the irrigation seasons of the past six years. In addition to usage data, the District has used mapping technology to identify the parcel size and the area of each parcel that would be considered to be "irrigated area" (everything that is not a physical structure or hardscape surfaces).

Table 2 below offers a side-by-side comparison of the 2012-2017 irrigation seasons, again using the metered data group for calculation. On average, customers are using less than the traditional allocation, which is 3 acre-feet per gross acre, per year. Average usage compared to estimated need over the six years shows improvement. Users comply with the volume given them, as the estimated demand shows a significant improvement from 145 percent in 2012 to just 90 percent in 2015, but due to the hot and dry summer of 2016 and 2017, both increased.

Table 2 Water Savings Comparisons

Water Savings Comparisons						
	2012	2013	2014	2015	2016	2017
Used Gallons	284,912,371	220,146,962	205,346,968	168,066,551	217,748,680	236,101,249
Used AF	874	675.3	629.9	515.5	667.9	724.2
Used AF / Gross Acreage	2.69	2.08	1.94	1.60	2.06	2.23
Landscaped Area	225.3	225.3	225.3	225.3	225.3	225.3
Used AF/ Landscaped Area Acres	3.9	3	2.8	2.3	3.0	3.2
Average % Used of Est. Need	145.00%	117.40%	109.71%	90.24%	125.82%	136.42%
Average % Allocation Used	83.00%	64.00%	59.60%	50.18%	65.15%	70.10%
Average Allocation per Parcel/yr.	1.0 AF	1.0 AF	1.0 AF	1.0 AF	1.0 AF	1.0 AF
Total Allocation	1074.0 AF	1074.0 AF	1074.0 AF	1074.0 AF	1074.0 AF	1074.0 AF
*This data includes 1,057 meters that have data for 2012-2017 with accurate landscape area.						

Each year, the estimated need remains the same because it is based on the historical average reference rates with parcel size. The majority of users exceed the estimated need. The estimated need is listed on every metered customer's monthly usage report and is almost always less than the allotted amount they have for their parcel. See Attachment D – Sample Monthly Usage Statement.

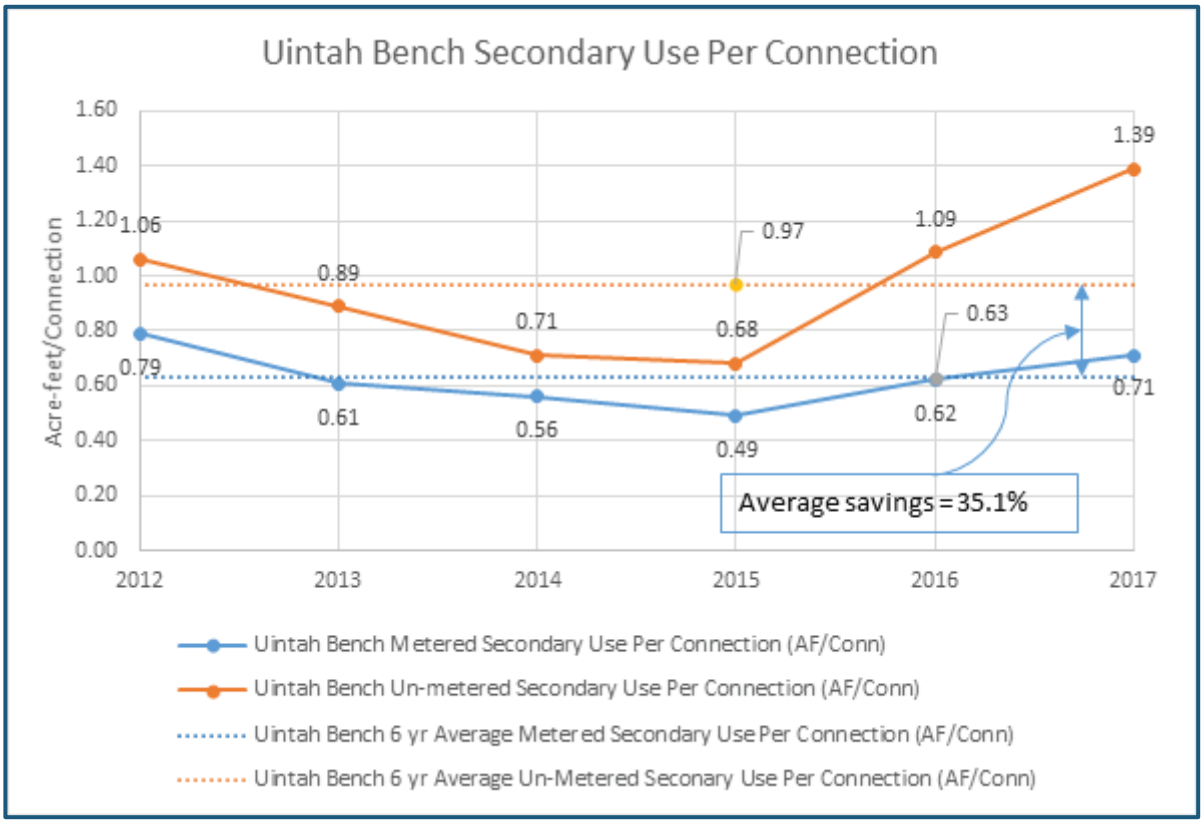
The estimated need is based on the moisture needs of turf, which has the highest water demand in any landscape. The assumption is made that the entire landscape area is turf, which gives users a generous amount of water for different landscape needs. Considering that most yards are not 100 percent turf (turf requiring the highest water demand of landscape irrigation) and that other

landscaping plants are more water efficient (trees, shrubs, gardens), it is a reasonable goal to have users reduce water consumption to meet and exceed their estimated need.

This data seems conclusive in showing that having a meter and receiving usage information promotes accountability and will cause behavior changes in usage to occur when users are given a target; however, it does not show the difference in use between metered secondary connections and un-metered secondary connections. To understand the water savings for a secondary metering project, the District has used pump and transmission line meter data to determine un-metered secondary use by subtracting out metered uses. For example, in the Uintah Bench Service area, metered end user connections used on average 0.71 AF/connection/yr. During the same time period, un-metered secondary connections are estimated to have used on average 1.39 AF/connection/yr. The 1.39 AF/connection/yr was calculated using flow data for the Weber Aqueduct, the District's Washington Terrace Well and Burch Creek, which all feed the Uintah Bench service area. From the total flow in water delivered to the District's South Weber Water Treatment Plant, water consumed by metered end user connections and water wholesaled to other entities were removed. The remaining water is used by the Uinta Bench retail secondary unmetered service connections.

Figure 4 below shows the secondary water use by year for both metered and un-metered connections. On average, metered secondary connections used 35.1 percent less than un-metered connections. An interesting item to note is that the summers of 2016 and 2017, were very hot and dry in northern Utah, which caused an increase in water use across the District's service area. However, the metered secondary irrigation users did not increase their use as much as un-metered users did.

Figure 4 Uintah Bench Comparison of Metered & Unmetered Users



A similar analysis has been completed for the Woods Cross and the Farmington secondary service areas, and was shown previously in part (a) above.

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).

Photo 3 Sensus IPerl Meter with AMR

This project does not deal with the installation of main distribution meters. However, the project will accomplish end-user metering most of the Woods Cross secondary system. This will allow the District to better understand if any water is currently being lost to leaks. If system losses are found, steps will be taken to find and repair leaks or to search for and correct any unauthorized connections that may have been made to the system.

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

WBWCD is currently approving the installation of the Sensus Iperl meter for the traditional 1-inch connections. In the case that a service requires more flow than a 1-inch meter can supply,

the Elster EvoQ4 meter will be used. However, there will only be a few of these meters. The approved EvoQ4 meter for larger connections comes in 2-inch and 4-inch size. The EvoQ4 meters are compatible with the AMR radio transmitter currently used to gather meter usage data and the fixed network AMI system the District implemented in the past year. The new AMI system provides usage data in hourly increments, which is important to the District. WBWCD uses the hourly data to track irrigation timing and volume of water used at irrigation times. This proposed project will involve the installation of approximately 300 meters and radio transmitters during year one, and roughly 450 in year two.

Photo 4 EvoQ4 Meter

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

At the completion of each year of the project, WBWCD will have water usage data from every meter installed. The data will be in hourly increments from April 15 to October 15. The data will also include a monthly consumption value. Water savings will not be fully known after just one irrigation year. However, the usage will continue to be gathered every year and comparisons made to show how water use will adjust and decrease over time. It has been seen that simply having a meter installed has helped users quantify their usage and alter their behaviors. The historical data shows that most users have been responsive and appreciative of receiving monthly water use statements, and have reduced water usage as a result.

WBWCD will be able to use historical trunk line meter data to compare usage from years prior to metering with years following metering. If weather is significantly different between years, evapotranspiration rates can be used to normalize data. Comparing historical water use to use after full implementation of the meter project will more accurately depict what impact the installation of individual meters has on the entire system.

E.1.2. Evaluation Criterion B – Water Supply Reliability

Address how the project will increase water supply reliability. 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, WBWCD supplies retail secondary and wholesale culinary water to all of the municipalities within the proposed project area. The proposed project will provide another opportunity to continue to collaborate with Woods Cross City to promote conservation and to develop a more reliable water supply. The water saved from this project will also have a positive impact on cities in the southern Davis County area that receive water through WBWCD's Davis Aqueduct. Water supplies within this area have been stressed because of decreasing groundwater levels and difficulties for WBWCD in meeting peak demands during the summer months.

- *Is there widespread support for the project?*

WBWCD and the cities in the proposed project area are in support of the project because it will promote conservation of water, decrease groundwater pumping in the area and free up capacity in the Davis Aqueduct needed to meet peak demands.

The proposed project will help move the state of Utah and WBWCD closer to their goal of 25 percent in reduced water use by 2025. Letters of support for WBWCD project include Division of Water Resources and Wood Cross City can be found in Attachment E – Letters of Support.

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

The Division of Water Resources (DWRe) recognizes the importance of water conservation and the water saved through this improvement project. They have always supported projects such as this through matching loans and planning grants to water districts, municipalities, and irrigators. Within DWRe's letter of support, they indicate that WBWCD is and continues to be a valuable partner promoting wise water use in our state and community, as well as being partners in the Governors Water Conservation Team and the Slow the Flow campaign.

Currently, the District delivers water to many cities, sub-conservancy districts and private irrigation companies. The District has the highest percentage of secondary water use in Utah. This is the primary reason that emphasis has been made, and the accountability for this water at the user level is such a priority. This project will allow the District to work with these other entities and lead the way in improving the efficiency of the secondary water systems within District boundaries.

It will also increase water use awareness among residential water users in a way that could not be achieved in any other way. The District believes that this project, along with other conservation goals and activities will help prevent a water-related crisis or conflict because it will provide more water to be available for future needs and growth which is projected to double along the Wasatch Front by 2060. The future customers in the District's service area can be more aware of their water use, and it will be easier to help them reduce if they fall into a category of excessive use.

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

WBWCD has already seen conservation improvements by others, i.e. Davis and Weber Counties Canal Company – large piping and metering projects in 2015 and 2016. Other improvements – Echo Canal Company, Haights Creek Irrigation Company, Hoytsville Ditch Company and many others are working to try to make a difference within the WBWCD service area by piping, pressurizing, and metering their systems.

- *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.*

As previously mentioned, the Woods Cross area is primarily served by the Davis Aqueduct. The 23-mile long Davis Aqueduct is one of the District's most critical pieces of infrastructure because it provides raw water to the 46 MGD Davis North

Water Treatment Plant in Layton, Utah and the 16 MGD Davis South Water Treatment Plant in Bountiful, Utah, and supplies wholesale and retail secondary customers all along its length and critical industrial flows at its terminus.

As demands due to new growth and development have increased in areas served by the Davis Aqueduct, peak flows have reached the maximum capacity of the aqueduct. As the areas served by the Davis Aqueduct continue to grow rapidly, the District expects additional demand for both secondary and potable water in the south Davis County area. Currently, the capacity of the Davis Aqueduct is a limiting factor in providing water during peak summer water demands. Another concern for the south Davis County Area water supply is the declining groundwater levels issues which will likely limit significant future groundwater development in the area, and may actually result in pumping reductions to existing water wells in the area.

Drought and overwatering are other issues impacting water reliability in the Woods Cross service areas. Drought affects many areas in the state of Utah and has a significant impact on how much water is available during each irrigation season. Drought is no stranger to the service area, and is an uncertain variable that cannot be controlled. Regardless of drought and other water reliability/quality issues that may occur within the delivery system, water users are overwatering, and are not being conscientious of their water use habits that could be better managed to prepare for the drought years.

- *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?*

Water conserved through this project will be banked and used for future growth needs and to supply new connections and future demand needs within the District's service area. Water not required for the project area will remain in the system as stored water or instream flows. It is also possible that saved water could go to meet the needs of other areas in the District.

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

WBWCD is prepared to address the water reliability concerns described above by installing water meters and implementing water awareness education. The proposed secondary metering project will increase the water supply reliability of the south Davis County area in two ways:

1. Decreased secondary water use in the Woods Cross area will result in less water needing to be conveyed through the Davis Aqueduct, which will result in additional peak raw water capacity being available at the Davis South Water Treatment Plant for treatment for potable water purposes.
2. Decreased secondary water use in the Woods Cross area will allow the District to decrease pumping of secondary water wells in the area during off peak times, which will have a positive impact on groundwater levels, which are a significant issue in the area.

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

The proposed project will reduce the potential for water-related conflict. The District serves one of the fastest growing regions in the Western United States, with the population of the region (and thereby the demand for water) expected to increase by significantly by 2025. Due to this rapid growth, there is an increasingly volatile balance between the demand for irrigation water, and the rapidly increasing demand for additional municipal and industrial (M&I) water. Particularly in years of drought, the proposed project will substantially contribute to the District's conservation efforts and will help to alleviate potential future conflicts.

There is always anxiety when it comes to water. Natural disasters, drought, residential users over watering, and un-maintained canals and ditches seem to be the major factors in developing tension within any service area. WBWCD has had its share of tension, and will continue to feel the pressure, especially as demands for more water come from expanding residential growth. During the Dam Safety work that was being performed at Echo Reservoir, the stress and strain was intense. It was anticipated that things would lighten up, but due to the persistence of the drought, early spring runoff, and a dryer-than-normal summer – tension reared its ugly head once again.

As previously mentioned, water savings will also help with the conflict of decreasing groundwater supplies in the area. With the water savings from metering, it is anticipated that there will be a decrease in pumping the Mills Park Well, which will help with groundwater conditions that this area has been experiencing due to drought and pumping.

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

Meters will allow for more water to be saved and held in WBWCD upstream reservoirs, and within the Weber River system, allowing the District to hold water for later in the irrigation season when it is needed to be used for instream flows and held for storage water for the next season. Previously, in our work with Utah Division of Wildlife Resources (UDWR), and Paul Burnett with Trout Unlimited, it was indicated that if the District could allow more water to run down key portions of the Weber River during the irrigation season, it would help the Bonneville Cutthroat Trout and Bluehead Sucker, which are listed on the state's sensitive species list. It is proven and documented that by allowing for more available water to stay within the habitat areas for longer periods of time, species are benefited.

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

WBWCD is committed to working with Woods Cross City, DWRe, and others throughout the project. See Attachment E – Letters of Support. Because of the amount of work to be completed within Woods Cross City, close collaboration will be important in implementing a successful project.

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

For this project, the amount of estimated water savings is 300 acre-feet/year. Within WBWCD's Woods Cross and Bountiful service area, approximately 5,300 acre-feet of

water is delivered annually. Approximately 4,200 acre-feet of this water is delivered to WBWCD's secondary irrigation users, 750 acre-feet delivered as wholesale irrigation water to North Salt Lake City and approximately 350 acre-feet delivered to agricultural users in the area. The irrigation water services approximately 3,787 connections. Currently, few connections are equipped with a meter except for new development. This project will start the metering process for existing secondary connections in this area.

- *Will the project benefit Indian tribes?*
  No, the project will not benefit Indian tribes.
- *Will the project benefit rural or economically disadvantaged communities?*
  No, the project will serve Woods Cross, Utah, which is not considered to be rural or an economically 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.*
  Based on information obtained from UDWR, there are recently documented occurrences of the Bonneville Cutthroat Trout within a 2-mile radius of the Weber River in the area near Echo Reservoir; as well as recent occurrences for the bald eagle and Bluehead Sucker within a half mile of the Echo reservoir, all of which are included on the Utah Sensitive Species List. The water savings that will be realized from this project will benefit the species listed above, because it is proven and documented that by allowing for more available water to stay within the habitat areas for longer periods of time, these species are benefited. Low stream flows affect many aspects of the Weber River. Stable and connecting flows between those habitats are a fundamental requirements for those conservation actions to be successful.

- *Will the project address water supply reliability in other ways not described above?*
  Within the Weber River Watershed Plan of 2014, it says that "The goal of this plan is to recognize both the human and ecological values that the watershed provides and develop strategies to protect and enhance those values." Allowing for more water to remain in the Weber River, Echo, East Canyon and other reservoirs, recreational opportunities will be benefited, water quality will be improved, recreation fishing will be sustainable, and economic development will continue.

  In addition, WBWCD is completing a Drought Contingency Plan which identifies secondary metering as a strategy to mitigate the impacts of drought. A secondary meter will not only conserve water to make more water available during drought years, but having a meter on a secondary connection will also allow WBWCD to restrict use during drought events whereas in the past the District could only ask that residents conserve water.

E.1.3. Evaluation Criterion C – Implementing Hydropower

If the proposed project includes construction or installation of a hydropower system, please address the following:

Describe the amount of energy capacity. *For projects that implement hydropower systems, state the estimated amount of capacity (in kilowatts) of the system. Please provide sufficient detail supporting the stated estimate, including all calculations in support of the estimate.*

There is no hydropower as part of this project.

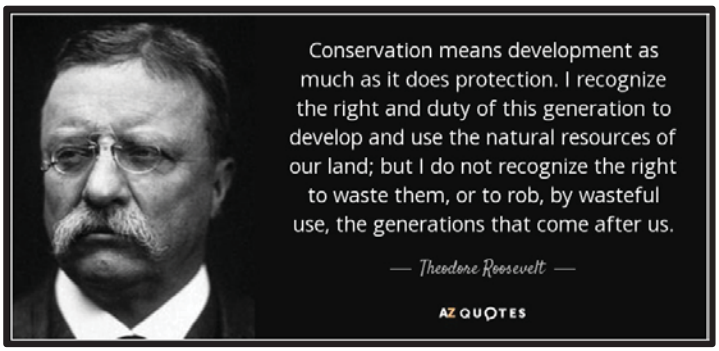
E.1.4. Evaluation Criterion D – Complementing On-Farm Irrigation Improvements

The Woods Cross service area also provides water deliveries of approximately 350 acre-feet to agricultural users in the area. There is likely potential for On-Farm Irrigation improvements at these farms; however, we are not aware of any current applications.

E.1.5. Evaluation Criterion E – Department of the Interior Priorities

Address those priorities that are applicable to your project. Points will be allocated based on the degree to which the project supports one or more of the priorities listed, and whether the connection to the Priority(ies) is well supported in the proposal.

1. *Creating a conservation stewardship legacy second only to Teddy Roosevelt*



On the topic of conservation, Teddy Roosevelt wisely instructed, "Conservation means development as much as it does protection. I recognize the right and duty of this generation to develop and use the natural resources of our land; but I do not recognize the right to waste them, or to rob, by wasteful use, the generations that come after us." WBWCD agrees with Teddy Roosevelt that America's precious water resources must be available and reliable for current and future generations. WBWCD operates the Weber Basin Project which belongs to the Federal Government, and ultimately, this project will expand the capacity of this existing infrastructure by reducing demand on the system. WBWCD will take a major step towards ensuring water availability and reliability for current and future generations **by not only** metering its secondary water distribution, but by educating its users to keep them from overwatering.

Concern over water conservation is most prevalent in the western United States, and especially in Utah – the second driest state in the nation. Because of drought, water conservation in Utah is something that is taken seriously by water distributors and users throughout the state. Although WBWCD can do nothing to stop drought, the District actively seeks ways to reduce the disastrous effects of drought. They are preparing a Drought Contingency Plan that will help them be able to better understand their response to drought and how to work with all of its users. The proposed project is an opportunity for WBWCD and its water users to work together to create goals and sound water use habits. Working towards these goals and implementing better water use habits will protect Utah's water resources and ensure that these resources are made available to sustain current and future water users within the WBWCD service area.

2. *Utilizing our natural resources*

The proposed project will contribute to ensuring American Energy is available to meet our security and economic needs by reducing the need for power by saving water, which will result in decreased energy used for pumping wells.

3. *Restoring trust with local communities*

As WBWCD works with the local cities located within their service area to address two major issues (water supply reliability and groundwater conditions in the area), they work to restore trust with those local cities and the water users within city jurisdiction. Building trust through education, conservation, and accountability, WBWCD will help its water users better manage their water use habits. Many water users are concerned that their neighbors are overwatering; and some concerned with their own water usage. The proposed project will give WBWCD the resources needed to address these issues, and metering will provide a solution to help restore trust with local communities who are concerned about their neighbor's (and their own) overwatering and wasting of valuable water resources.

4. *Modernizing our infrastructure*

According to a study from 2009 called "Metering Secondary Water in Residential Irrigation Systems," done by Utah State University, "…standard residential water meters do not normally function in debris-filled secondary water. The metering mechanism can clog or be degraded by suspended debris of both organic and inorganic nature in the water. By way of innovative meter designs [as is proposed in WBWCD's project]…secondary water systems have had success metering their secondary water." Modern meter designs on secondary water systems have proven successful in making many water users more aware of how much water they are really using. The study mentions that because secondary water supply is commonly charged at a fixed rate, many water users assume that they have the right to an unlimited supply of water. WBWCD hopes that this way of thinking becomes something of the past, and that current and future water users take advantage of the modern meter designs, provided by their water distributor, to reduce their water usage.

E.1.6. Evaluation Criterion F – Implementation and Results

E.1.6.1. Subcriterion No. 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.

Weber Basin Water Conservancy District has a water conservation plan that has been implemented, updated and submitted in 2013 to the Utah State Division of Water Resources as well as the Bureau of Reclamation (Provo Area Office). The District has also completed a System Optimization Review (SOR) for an overall planning and projecting of future water needs and demands. In addition, the proposed project WBWCD is currently underway to prepare a Drought Contingency Plan funded by Reclamation. This plan will allow them to develop better understanding of the impact of drought and strategies to plan for sustainable water demands and water supplies as they continue to change. Within the Drought Contingency Plan, water conservation will be an important action in mitigating the effects of future droughts. With conservation being the key, secondary metering will permit the District to enforce water restrictions during times of Drought, which they are currently unable to do.

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, or other planning efforts done to determine the priority of this project in relation to other potential projects.*

   The District SOR has identified canal lining and metering projects as the top two priorities. This application addresses metering projects. The District has also developed a water conservation plan that was most recently updated in 2013. Retail secondary irrigation metering is one of the priority items listed in the District's water conservation plan. Metering fits into conservation as well as water management plans that will assist the District in accounting for current water use while planning how to meet the needs of future demands. With the development of the Drought Contingency Plan, WBWCD will be able to continue their goals of the SOR and water conservation plan and help them meet other goals of the State.

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 proposed project will assist the District in meeting its conservation goal, which is also the State of Utah's goal of a 25 percent reduction in per capita use by 2025. Furthermore, the District plans to meet 35 percent conservation by 2050. Conservation can be thought of as a future supply, because it delays the need for more costly water development projects.

   In the District's area, with current unmetered secondary water, the greatest potential for conservation comes with accountability and end user knowledge of how much they use. Data that is presented in the proposal also shows the conservation savings that will be achieved to benefit the District and to benefit surrounding areas and other water purveyors to meet water conservation goals, environmental improvement goals, and energy reduction goals by reduced pumping costs.

E.1.6.2. Subcriterion No. 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). For more information calculating performance measure, see Appendix A: Benefit Quantification and Performance Measure Guidance.

The performance measures that will be documented and quantified to show the actual benefits upon completion of the project will include water that is saved and/or better managed.

Water Savings and/or Better Water Management Performance Measures

This proposed Project will be measured for success by the reading and logging of the data from the installed meters, which will be logged monthly by an AMI system. The information gathered will be in hourly intervals and will be analyzed and compared over time to show and track water savings. As WBWCD logs hourly incremental data from the meter, they are able to compare allocations with actual usage. This will allow them to determine if the allocations are too large, and use the collected water usage data to tailor and target water conservation educational material to users that may not understand or may not recognize they need assistance in reducing usage. Current usage is based on trunk line and facility meters in the area. This produces an average use per un-metered connection in the area. Once meters are installed, water savings will

be quantified using the individual meters, new measures for targeting high use can be developed and implemented, and the direct water savings will be tracked.

All of this will be documented for the water users and sent to them for their information using the Water User Monthly Statement. See Attachment D – Sample Water User Statement.

E.1.7. Evaluation Criterion G – Nexus to Reclamation Project Activities

Is the proposed project connected to Reclamation project activities? If so, how? Please consider the following:

Yes, the proposed project is directly related to Reclamation activities, since the water supplying the Woods Cross area is part of the Weber Basin Project. Much of the infrastructure, pumping, and other activities are connected to Reclamation-owned land, facilities, and infrastructure that the District operates to provide the water where needed.

- *Does the applicant receive Reclamation project water?*
  The majority of the District's water is original Weber Basin Project water. Weber Basin is the central entity for Reclamation Project water for the entire region.
- *Is the project on Reclamation project lands or involving Reclamation facilities?*
  The metering of the proposed project will not take place on Reclamation project lands, but will have an effect on Reclamation facilities due to the decrease in water needed over the long term. Reduced usage equates to an increase in storage, an increase in water marketing, a decrease in pumping, and a reduced cost when upsizing and improving existing infrastructure to carry additional water to meet the future demands.
- *Is the project in the same basin as a Reclamation project or activity?*
  The proposed project is within the WBWCD District boundaries, which is a Reclamation project.
- *Will the proposed work contribute water to a basin where a Reclamation project is located?*
  This proposed project will serve to support Reclamation objectives and will augment water supplies in the Weber Basin area, thus reducing future conflicts for water to this area. Water saved in this project will be used for future demands in the Weber Basin service area, which is part of a Reclamation project.
- *Will the project benefit any tribe(s)?*
  This proposed project will not benefit any Tribes.

E.1.8. Evaluation Criterion H – Additional Non-Federal Funding

State the percentage of non-federal funding provided using the following calculation: Non-Federal Funding divided by Total Project Cost.

WBWCD is requesting $300,000 or 40 percent from Reclamation. WBWCD will be responsible for the remaining $450,000.00 or 60 percent of the total project costs.

$$\frac{\$450{,}000 \text{ Non-Federal Funding}}{\$750{,}000 \text{ Total Project Cost}} = \mathbf{60\%}$$

Project Budget

Funding Plan and Letters of Commitment

Describe how the non-Federal share of project costs will be obtained.

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 District will fund all non-Federal contributions entirely with Weber Basin Water Conservancy District operating revenues.

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

N/A

Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	*AMOUNT*
Non Federal Entities	
Recipient Funding	450,000.00
Non-Federal Subtotal	450,000.00
Other Federal Entities	
Other Federal Subtotal	0.00
Requested Reclamation Funding	**300,000.00**
Total Project Funding	**750,000.00**

Budget Proposal

Budget Proposal

Budget Item Description	Computation		Quantity Type	Total Cost
	$/Unit	Quantity		
Salaries & Wages	$0.00	-	-	$0.00
Fringe Benefits	$0.00	-	-	$0.00
Travel	$0.00	-	-	$0.00
Equipment	$0.00	-	-	$0.00
Supplies and materials	$0.00	-	-	$0.00
Contractual /Construction				**$750,000.00**
1' End User Secondary Meter	$980.00	750	EA	$735,000.00
Environmental Review	$15,000.00	1	EA	$15,000.00
Other				**$0.00**
				$0.00
Total Direct Costs				**$750,000.00**
Indirect Costs				
Type of rate	Percentage	$base		**$0.00**
Total Estimated Project Costs				**$750,000.00**

Budget Narrative

Salaries and Wages

No WBWCD Salaries or Wages will be included. All services will be contracted. WBWCD's staff time will be over and above the cost of the project and will not be counted toward the project cost.

Fringe Benefits

No fringe benefits will be required.

Travel

No travel will be required.

Equipment

Equipment will be part of the contracted portion of the project.

Materials and Supplies

Materials and Supplies will be part of the contracted portion of the project and will be documented as required.

Contractual

In order to determine unit costs, which were included in the cost estimate for this project, WBWCD relied upon contract unit prices from similar projects recently completed in 2017.

WBWCD will bid the construction portion of the project to several prequalified construction companies. The contractual costs shown are estimates for each of the components to furnish and install all the equipment. Generally, the low bidder will be selected based on a determination of acceptable qualifications.

Contractual will include installing 750 meters and boxes.

Environmental and Regulatory Compliance Costs

The environmental document for this project will be minimal in that all of the metering will be within previously disturbed areas. The cost was included as 1 percent of the project at $15,000.

Other Expenses

No other expenses will be part of the project.

Indirect Costs

No indirect costs will be part of the project.

Total Costs

WBWCD Portion: $450,000 Fed Portion: $300,000 Total: $450,000

Environmental and Cultural Resources Compliance

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

The project will require only a minimal level of earthwork to install meters. There will be some excavation of the existing connection to allow for a meter pit to be installed. No animal habitats will be negatively impacted, and work impacts will be very minimal, even to existing landscapes.

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?

WBWCD is not aware of any impacts concerning threatened or endangered species in this area.

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.

WBWCD is not aware of any impacts to wetlands in this area.

When was the water delivery system constructed?

The original District/Reclamation Project began in the late 1950s and continued over several year periods in the early 1960s. Since then, additional infrastructure with conveyance canals and pipes have been added to meet the growing population water needs.

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.

There will be no significant modifications to the main conveyance system within the metering portion of the project.

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.

WBWCD is not aware of any building, structures or features that would be impacted or would qualify. A cultural resource inventory will be completed as part of the submitted environmental document.

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

WBWCD is not aware of any impacts to any archeological sites. An archeological resource inventory will be completed as part of the submitted environmental document.

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

The project will not require a right-of-way or relocations from adjacent properties, and will have no impact on residential uses within the study area.

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

No.

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.

Required Permits or Approvals

Applicants must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

Woods Cross City will be involved and notified of all metering project implications and timelines. Any concerns they have will also be addressed prior to the project construction. WBWCD will work with homeowners to minimize installation impacts and provide an improved service connection.

Letters of Support

Include letters of support from interested stakeholders supporting the proposed project.

Letters of support from the following entities are included in Attachment E – Letters of Support:

» Division of Water Resources – Eric Millis, Director
» Woods Cross City – Gary Uresk, City Administrator

Official Resolution

Include an official resolution adopted by the applicant's board of directors or governing body. The official resolution may be submitted up to 30 days after the application deadline.

The Official Resolution for the Woods Cross Secondary Water Metering Project will be submitted within 30 days after the application deadline.

Weber Basin Water Principal Infrastructure

DAMS & RESERVOIRS

Name	Location	Type of Dam	Height (ft)	Total Capacity (AF)	Usable District Capacity (AF)	Acquisition Dates
Causey	Eastern Weber County	Earth & Rock	200	7,870	6,870	1962-1964
East Canyon	Southern Morgan County	Concrete Arch	245	51,200	20,100	1965-1967
Lost Creek	Eastern Morgan County	Earth & Rock	220	22,500	20,010	1964-1966
Pineview	Ogden Valley, Weber County	Earth & Rock	91	110,150	66,228	1955-1957
Smith & Morehouse	South-eastern Summit County	Earth & Rock	82	8,350	6,560	1984-1988
Wanship	Summit County	Earth & Rock	156	62,120	60,860	1954-1957
Willard	Southern Box Elder County	Earth	36	227,189	202,160	1957-1963

AQUIFER STORAGE & RECOVERY

Name	Location	Pond Area (acres)	Capacity (cfs)	Acquisition Dates
ASR	Weber County	7.5	10	2002

DIVERSIONS

Name	Location	Pass-Through Capacity (cfs)	Acquisition Dates
Ogden Valley	South Fork of Ogden River	2,000	1962-1964
Slaterville	Weber River west of Ogden	9,000	1956-1957
Stoddard	Weber River north of Morgan	6,000	1955-1956

HYDRO GENERATION POWER PLANTS

Name	Location	Type	Capacity (kw)	Acquisition Dates
Causey	Eastern Weber County	2 unit	2,100	1999-2000
Gateway	Mountain Green	1 unit	4,275	1957-1958
Wanship	Wanship	1 unit	1,950	1957-1958

CANALS, TUNNELS & PIPELINES

Name	Location	Type	Capacity (cfs)	Length (miles)	Acquisition Dates
Davis Aqueduct	Davis County	Concrete pipe	355	23.0	1954-1957
Gateway Canal	Morgan County	Concrete-lined	700	8.5	1954-1956
Gateway Tunnel	Morgan and Davis County	Concrete-lined	435	3.3	1952-1954
Layton Canal	Davis County	Earth-lined/concrete-lined/pipe	260	18.0	1962-1964
M&I Pipelines	Davis and Weber County	Varies 6”-48”	varies	80.0	1955-2012
Ogden Valley Canal	Weber County	Part earth-lined	35	9.2	1962-1964
Secondary Pipelines	Davis and Weber County	Varies 2”-36”	varies	325.0	1955-2012
Weber Aqueduct	Weber County	Concrete pipe	80	5.0	1954-1956
Western Summit County	Summit County	Ductile Iron	8.9	9.0	2013*
Willard Canal	West Weber County	Earth-lined/concrete-lined	1,050	11.0	1961-1963

Weber Basin Water Principal Infrastructure

PUMPING PLANTS

Name	Location	Capacity (cfs)	Height of Lift (ft)	Acquisition Dates
Antelope Booster	Layton	22	50	1978
East Bountiful	Bountiful	18	475	1955
East Layton	Layton	9	65	1955
Gateway	Mountain Green	150	150	1995
Kanesville #1	West Haven	3	218	2000
Kanesville #2	West Haven	10	315	2001
Layton Canal	West Haven	260	23	1955
Old Post Rd Booster	Ogden	6	200	1960
Rockport	Wanship	25	45	2009
Roy Drought Relief	Roy	150	340	1981
Sand Ridge East	Layton	9	92	1955
Sand Ridge West	Layton	15	138	1955
South Davis	Bountiful	18	530	1955
Unitah Bench	South Ogden	18	365	1955
Val Verda	Bountiful	6	240	1955
West Haven #1	West Haven	10	218	2003
West Haven #2	West Haven	3	230	2010
Willard No. 1	West Weber County	500	45	1960
Willard No.2	West Weber County	250	20	1960

WATER TREATMENT PLANTS

Name	Location	Capacity (MGD)	Acquisition Dates
Davis North WTP	Layton, Davis	46	1955
Davis South WTP	Bountiful, Davis	16	1955
East Canyon WTP	Jeremy Ranch, Summit	5.5	2013*
Weber South WTP	Ogden, Weber	32	1955

***Infrastucture acquired by the District**

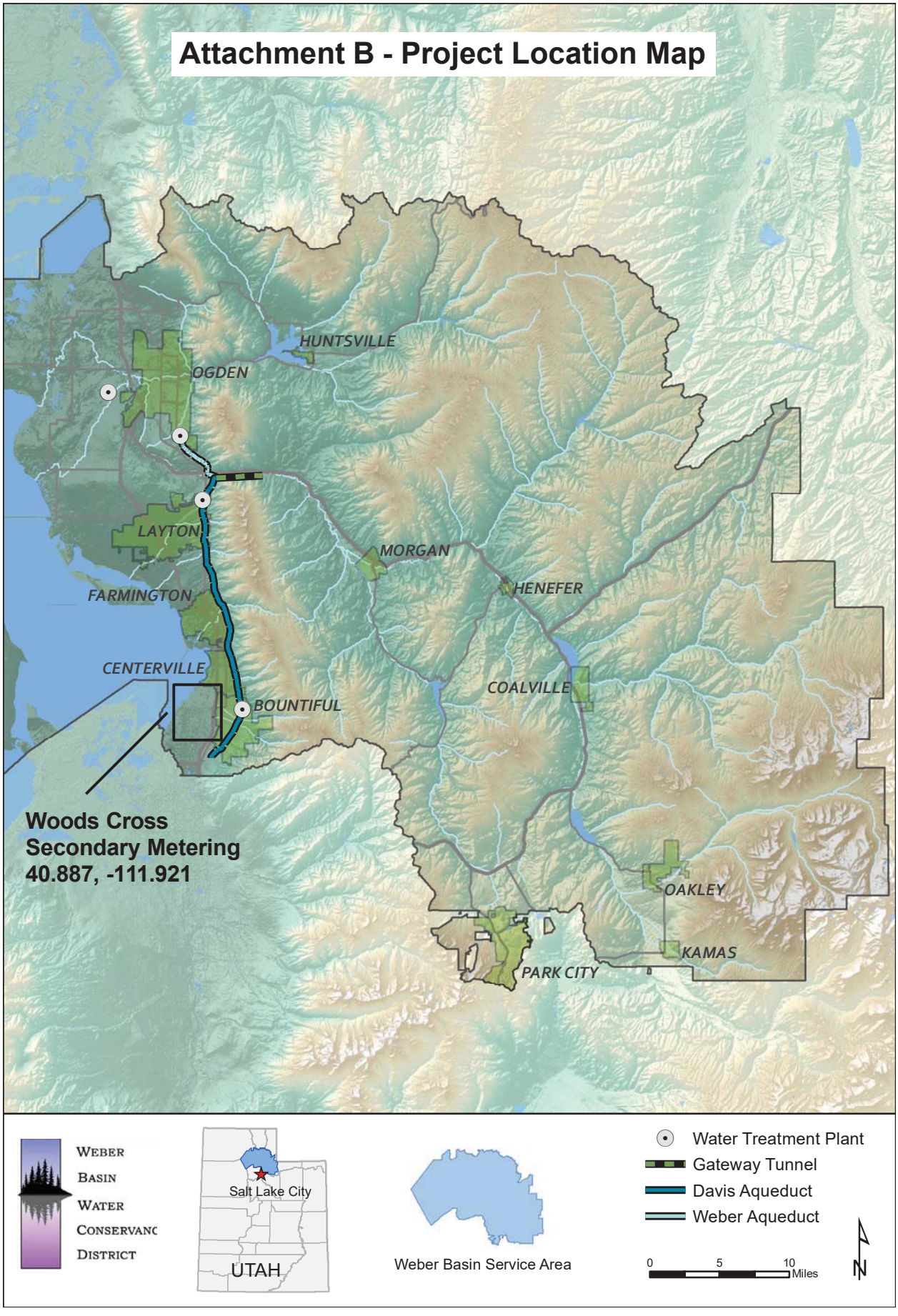
AF=Acre Feet • CFS=Cubic Feet per Second • MGD= Million Gallons per Day

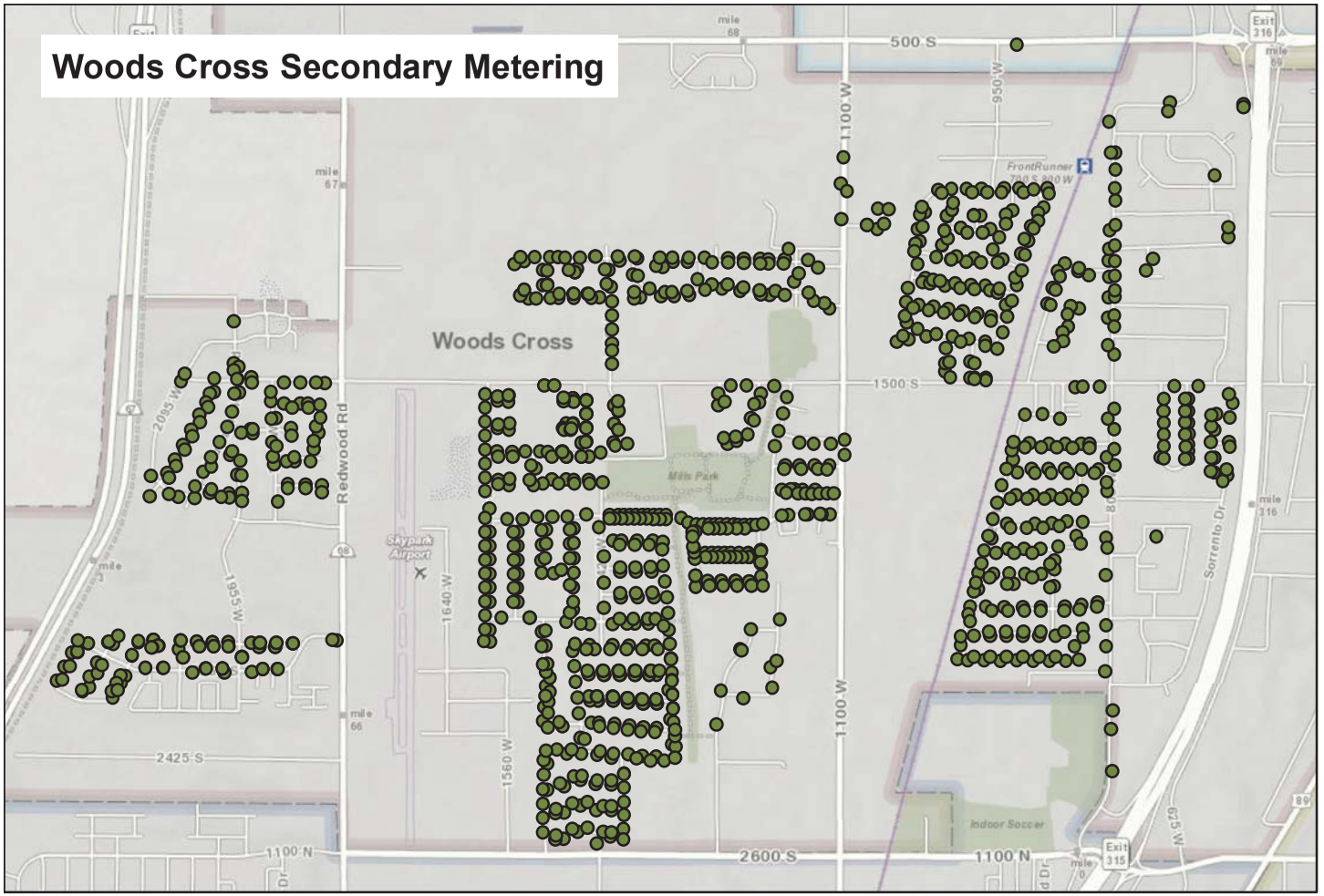
UNDERGROUND WATER WELLS

Name	Location	Type	Capacity (cfs)	Acquisition Dates
Ben Lomond	Harrisville	M&I	1.8	2001
Clearfield #1	Clearfield	M&I	5.0	1961
Clearfield #2	Clearfield	M&I	5.0	1961
Davis Boulevard	Bountiful	M&I	2.2	2003
District Well #2	South Weber	M&I	11.0	1985
District Well #3	South Weber	M&I	10.0	1990
Fairfield	Layton	M&I	10.0	1992
Farmington #1	Farmington	Irrigation	5.0	1995
Farmington #2	Farmington	Irrigation	5.0	1996
Laytona	Layton	M&I	5.0	1958
Mills Park	Woods Cross	Irrigation	2.2	2011
North Ogden	North Ogden	M&I	1.8	1967
North Weber	Harrisville	M&I	1.6	2006
Orchard Dr. Well	Bountiful	M&I	0.8	1991
Riverdale	Riverdale	M&I	6.6	1960
South Davis	Woods Cross	M&I	5.2	1961
South Weber #1	South Weber	M&I	10.0	1962
South Weber #2	South Weber	M&I	10.0	1962
Washington Terrace	Washington Ter.	Irrigation	4.0	2013
West Bountiful 5th South	West Bountiful	Irrigation	4.0	1992
West Bountiful Golf	West Bountiful	Irrigation	2.0	1993

Photo Credit: Gordon Barrow

Attachment B - Project Location Map





WEBER BASIN WATER CONSERVANCY DISTRICT

Attachment C - Project Detail Map

Unmetered Secondary Connections

0 0.15 0.3 Miles

N

WEBER BASIN WATER CONSERVANCY DISTRICT

2837 East Highway 193 • Layton, Utah 84040 • Phone (801) 771-1677 • (SLC) 359-4494 • Fax (801) 544-0103

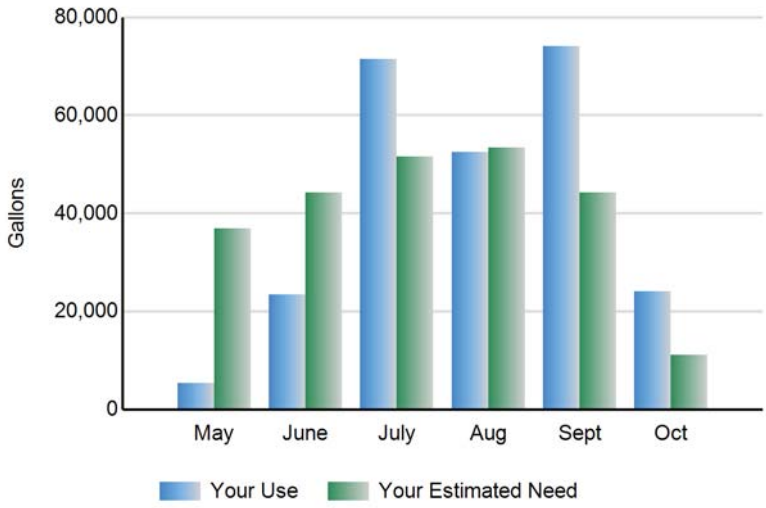
Report Date: 10/06/2015

Weber Basin Water Conservancy District
MEASURE THE DIFFERENCE
Learn More. Use Less.

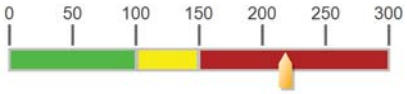
Sample User
123 Sample St.
Sample City, USA

SECONDARY WATER USE REPORT

Meter Number: 2010310892		Usage period: 9/14/2015 through 10/1/2015					
Previous Meter Read		**Current Meter Read**		**Water Used This Month**	**Elapsed Days**	**Average Daily Use This Month**	**Year to Date Use**
Date	**Reading**	**Date**	**Reading**				
09/14/15	1,562,725	10/01/15	1,586,829	24,104 gal.	17	1,418 gal.	250,716 gal.



Your Landscape Area (sq ft)	Your Water Need Based on Your Landscape Area This Month	This Months % of Use to Est. Need
11,882	11,050 gal.	218



Your landscape area is derived from aerial imagery and encompasses your entire lot according to county records, excluding your home and driveway footprint. Estimated need is calculated from 30yr average evapotranspiration values for each month.

If you would like to receive this report by email, contact us at conservation@weberbasin.com with your name and account number, or call us at 801-771-1677.

Thank you for your efforts in helping to conserve water this year. As one of our planet's most precious natural resources, we need all the help we can get!

Weber Basin advises opening your main irrigation valve to allow your system to drain properly now that our system has been shut down. It should be closed again by April 1st, 2016 to prevent water from entering your system without your knowledge prior to next years irrigation startup.

If you have questions or comments on this report, please contact us @ 801-771-1677.

Weber Basin's
Water Conservation Learning Garden
2837 E. Hwy 193, Layton Utah

Woods Cross City

April 26, 2018

Tage I. Flint, General Manager/CEO
Weber Basin Water Conservancy District
2837 East Hwy 193
Layton, UT 84040

Dear Tage,

Woods Cross City is pleased to write in support of your grant application being submitted to the Bureau of Reclamation Water and Energy Efficiency Grants Program. We applaud your efforts to increase the efficiency of your system to conserve valuable water and energy. We understand that this metering project will meter all water supplied to the resident and inform the resident through a monthly statement of how much water they are using. This information will then be used by the resident to help them adjust their watering schedules and conserve water

Woods Cross City recognizes the importance of water conservation in our often water-short basin. The water saved through these improvement projects will provide benefit to water users and the regional environment. Weber Basin continues to be a valuable partner promoting wise water uses in our community.

We strongly support your grant application and appreciate the advancements it will make in water savings and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District.

Sincerely,

Gary Uresk
City Administrator

1555 South 800 West · Woods Cross, Utah 84087 · 292-4421 · Fax 292-2225

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Water Resources

ERIC L. MILLIS
Division Director

April 30, 2018

Tage I. Flint, General Manager/CEO
Weber Basin Water Conservancy District
2837 East Hwy 193
Layton, UT 84040

Tage,

The Utah Division of Water Resources is pleased to write in support of your grant application to the Bureau of Reclamation Water and Energy Efficiency Grants Program. We applaud your efforts to increase the efficiency of your system to conserve valuable water and energy. We understand that this metering project will meter all secondary water supplied to the resident and inform the resident through a monthly statement of how much water is being used. The resident will then have the knowledge to use this information to adjust watering schedules and conserve water.

The Division recognizes the importance of water conservation and the water saved through these improvement projects will provide benefit to water users and the environment. The Weber Basin Water Conservancy District continues to be a valuable partner promoting wise water uses in our community as well as being partners in the Governors Water Conservation Team and the Slow the Flow campaign.

We strongly support your grant application and appreciate the advancements it will make in water savings and improving water efficiencies in the District boundary of Weber Basin Water Conservancy District.

Sincerely,

Eric L. Millis, P.E.
Director

1594 West North Temple, Suite 310, PO Box 146201, Salt Lake City, UT 84114-6201
telephone (801) 538-7230 • facsimile (801) 538-7279 • TTY (801) 538-7458 • *www.water.utah.gov*