Production Meter Upgrade Project

Submitted for Reclamation's WaterSMART Grants: Small-Scale Water Efficiency Projects FY 2019

April 24, 2019

Rancho California Water District
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A. Executive Summary

April 24, 2019
Rancho California Water District
Temecula, Riverside County, California

Project Summary

Rancho California Water District's (RCWD/District) Production Meter Upgrade Project (Proposed Project) improves water loss management by upgrading sixteen existing propeller-driven meters at the District's water production facilities to state-of-the-art electromagnetic meters. Once upgraded, the production meters will provide more accurate water production data, will provide real-time production data through an interface with the District's existing SCADA system, and will reduce maintenance costs. Specific benefits RCWD will realize by upgrading the existing production meters include:

1. Increasing accuracy of water measurement by ~1.5% from +/- 2% to +/- 0.5%, thereby enhancing the District's ability to identify and mitigate water loss,
2. Improving RCWD's ability to quickly detect and repair system leaks through remote analysis of historical and real-time production data using the District's existing SCADA system, and
3. Enhancing the District's operational efficiencies by reducing costs associated with manual production meter reading and maintenance

The Proposed Project is supported by RCWD's water management planning efforts related to reducing water loss, and helps the District to attain compliance with California's State Bill 555, which requires retail water suppliers to meet performance standards for the volume of water losses. Funding provided by Reclamation for project implementation will be used to purchase ten of the sixteen upgraded production meters. RCWD's share of the cost will pay for the purchase of the remaining six meters and for the District's staff time spent on installing all sixteen of the meters and on administrative tasks related to Proposed Project implementation. Overall, the Proposed Project represents a significant water conservation effort, which improves water management and water supply reliability in an area that is highly dependent on Colorado River water.

Project Schedule *(length of time and estimated completion date)*

The Proposed Project can begin immediately upon award of funding and execution of the financial assistance agreement, which for this proposal is estimated to take place on 10/1/2019. Based on this estimated start date, the Proposed Project would be complete by 10/1/2021, within the two-year requirement. The Proposed Project Tasks & Schedule indicating key program milestones and applicable deliverables is provided on page 12 of this proposal.

Proximity of Project to Federal Facility

The Proposed Project is not on Reclamation project lands or a Reclamation facility. However, the project does reside in the Colorado River Basin within Reclamation's Lower

Colorado Region, and a large portion of the water used in the Proposed Project area is imported through the Colorado River Aqueduct (CRA) (Reclamation project water).

B. Background Data

Water Supply Sources & Quantities

RCWD obtains water from the following primary water sources: imported State Water Project (SWP) water from the California Bay-Delta, imported Colorado River water from the through the Colorado River Aqueduct (CRA), local groundwater from the Temecula Valley Groundwater Basin, and recycled water from both District and EMWD. On average, RCWD supplies approximately 65,000 acre feet per year. While a significant portion of this supply originates in the Temecula Valley and Wolf Valley Groundwater Basins, which RCWD manages, the majority is imported from the CRA and SWP.

Water Rights

After several legal judgements and decrees were issued over the course of more than sixty years directing the use and allocation of groundwater in the Temecula Valley Groundwater Basin, a settlement agreement, was reached and executed in March 2002. This agreement, the *"Cooperative Water Resource Management Agreement between Camp Pendleton and Rancho California Water District"* remains in place today to govern water flow in the Santa Margarita River and use of the Murrieta-Temecula Basin. Also, in December 2006, a 'Groundwater Management Agreement between Rancho California Water District and the Pechanga Band of Luiseno Mission Indians' was executed to govern the management of groundwater in the Wolf Valley Groundwater Basin in a manner not to exceed the safe yield that protects groundwater resources in that basin.

Current Water Uses & Users

RCWD provides water for urban and agricultural uses for these types of water consumers: Single-Family Residential, Multi-family Residential, Commercial, Industrial, Institutional and Governmental, Dedicated Landscape, Agricultural, and Agricultural/Residential. At this time, RCWD serves approximately 148,000 people through ~44,000 water connections.

Current & Projected Water Demand

During Fiscal Year 2014/15, total water demand was 65,279 acre-feet. Projected future water demands are shown in the following table for every five years beginning in 2020 and until the year 2040.

Use Type	Projected Water Use				
	2020	2025	2030	2035	2040
Single Family Residential	28,870	30,062	31,253	32,443	33,774
Multi-Family Residential	2,511	2,615	2,718	2,822	2,937
Commercial	3,871	4,031	4,190	4,350	4,529
Institutional	528	550	571	593	618
Dedicated Landscape	6,389	6,653	6,916	7,180	7,474
Agricultural Irrigation	25,217	26,258	27,298	28,338	29,501
Sales/Transfers/Exchanges to	6,781	9,278	9,278	9,278	9,278

Losses	3,391	3,531	3,671	3,811	3,967
Other	85	89	93	96	100
Wetlands or Wildlife Habitat	2	0	0	0	0
TOTAL	**77,645**	**83,067**	**85,988**	**88,911**	**92,178**

Major Crops and Total Acres Served

Typical agricultural uses include major crops of avocados, citrus, and winegrapes, totaling approximately 9,127 irrigated-acres, or approximately 10 percent of the District's service area.

Potential Shortfalls in Water Supply

The reliability of the District's water supply is largely dependent on the reliability of its imported water supplies, which are delivered by MWD through the SWP and CRA. On April 14, 2015, Metropolitan announced a reduction in deliveries due to a fifth consecutive year of drought in California and in response to new State of California Regulations. Even though that reduction has been temporarily lifted, the long-term reliability of RCWD's imported supplies is still questionable due to the state's extreme variability in yearly precipitation, and ongoing drought within the Colorado River Watershed. Furthermore, while imported supplies have temporarily recovered, the District's local supplies have not improved since the recent five-year drought. In fact, water levels within the local groundwater basin have dropped to historic lows. At this point, the District compensates for reduced local supplies through expensive imported water purchases and conservation efforts like the Proposed Project.

Description of Water Supply Facilities/Distribution System

RCWD receives its imported water (treated and untreated) directly through six Metropolitan water turnouts, three in EMWD's service area and three in WMWD's service area. The District also pumps local groundwater from 48 district wells and provides recycled through its Santa Rosa Water Reclamation Facility (SRWRF) and EMWD's Temecula Valley Water Reclamation Facility. From these sources, RCWD distributes water through about 900 miles of water pipelines. Water is then delivered to both municipal and agricultural customers through approximately 44,000 water meters, which are connected to an automated metering infrastructure and are monitored using wireless telemetry. RCWD owns and operates 37 storage reservoirs and one surface reservoir, Vail Lake. Current reservoir tank storage is 138.1 million gallons (MG). The storage capacity of Vail Lake is 49,000 AF. Current pond storage capacity is in excess of 737 AF.

Past Working Relationships with Reclamation

Date	Description of Relationship	Project Description
2018	Entered into $44,046.80 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Deploys ultrasonic water meters and an upgraded MyWaterTracker tool within strategically selected segments of the District's customer population.
2018	In the process of executing a $70,500 Agreement through WaterSMART: Small Scale Water Efficiency Projects	RCWD will establish a District Metered Area within a portion of the District's service area, which will function as a permanent water loss control system.

2017	Entered into $47,400 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Developed written water management plan for improving water pricing structure for agricultural and commercial customers
2016	Entered into $79,204.70 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Integrated three water conservation devices at five landscape irrigation sites for increasing irrigation efficiency
2016	Entered into $1,000,000 Agricultural Water Conservation and Efficiency Grants Fostering District/Farmer Partnerships Agreement	Provides financial incentives to farmers for replacing high water use crops with lower water use varieties.
2014	Entered into a $298,677 Bay-Delta Restoration Program: CALFED Water Use Efficiency Grant Agreement	Upgraded water meters to AMI Itron 100W Choice Connect network System, which automatically collects and stores hourly consumption data
2013	Entered into $54,681 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Developed blueprint for water use efficiency, to provide direction on programs to meet District's water efficiency goals
2012	Entered into $55,000 Lower Colorado Region Water Conservation Field Services Grant Program Agreement	Implemented cost-effective outdoor water use efficiency measures in residential landscapes
2012	Entered into $174,192 Bay Delta Restoration Program: Agricultural Water Conservation and Efficiency Grant Agreement	Promoted on-farm water use efficiency, building upon an existing Program to provide farmers with tools for scheduling irrigation events more accurately and effectively
2012	Entered into $150,000 WaterSMART: Title XVI Water Reclamation and Reuse Program Agreement	Completed Vail Lake Indirect Potable Reuse Conceptual Design Study
2009	Entered into $6,100,000 American Recovery and Reinvestment Act (ARRA) Agreement	Completed Vail Lake Stabilization and Conjunctive Use Project
2009	Entered into $260,440 CALFED Water Efficiency Grant Agreement	Targeted 500 high water use residential customers for on-site evaluations to identify and mitigate water waste
2008	Entered into $100,000 Soil and Moisture Conservation Program Grant Agreement	Funded a study demonstrating that smart irrigation controllers can provide water savings while maintaining crop integrity and fruit production for avocado growers
2007	Entered into $87,500 Water 2025: Preventing Crisis and Conflict in the West, Challenge Grant Agreement	Extended an ongoing smart irrigation controller direct install program for commercial and residential water users

C. Project Location

The location of the Proposed Project is in the state of California, Riverside County, within RCWD's service area. RCWD's service area is 85 miles southeast of the City of Los Angeles, 40 miles south of the City of Riverside and 65 miles north of the City of San Diego, within Reclamation's Lower Colorado Region. Figure 1 shows the location of the Proposed Project.

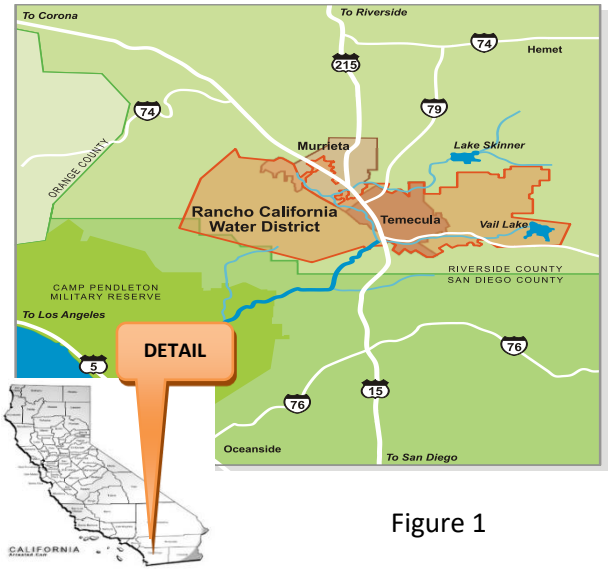


Figure 1

D. Technical Project Description & Milestones

Proposal Narrative & Work Plan

According to American Water Works Association's (AWWA) manual *M36: Water Audits and Loss Control Programs*, millions of gallons of water are lost each year to leakage, meter error, and water theft – causing water waste and impacting a water utility's bottom line. Therefore, AWWA encourages water utilities to ensure wise use of available water resources and minimal revenue loss by maximizing the accuracy of water measurement. Moreover, the state of California's recently enacted Senate Bill No. 555, which requires its retail water suppliers to quantify system water loss through an auditing process and to meet water loss performance standards.

Consistent with AWWA's recommendations and the requirements of California's Senate Bill No. 555, Rancho California Water District (RCWD/District) recently completed a full Water Loss Audit utilizing assistance provided by the California Department of Water Resources. The results of the audit (included as Appendix A) indicated that the District needs to address three main *Priority Areas for Attention* for reducing both real and apparent water loss, including: increasing the accuracy of water measured at its own production sources, increasing the accuracy of water measured at customer delivery points, and ensuring water produced and delivered is properly billed to customers. In response to the findings of the Water Loss Audit, RCWD has already implemented a range of actions to combat both real and apparent water loss, and billing inaccuracies. For example, the District used historical and real-time data available from water meters at customer delivery points to develop a software called SmartWorks, which uses predictive analytics to alert District staff when customer meters begin to malfunction. To date, the software has helped the District identify a number of malfunctioning meters (i.e. under-reading meters) needing repairs and/or replacement and to recover over $700,000 in lost revenue resulting from metering inaccuracies. The Proposed Production Meter Upgrade Project (Proposed Project), represents an additional effort that addresses the *Priority Area for Attention* identified in the Water Loss Audit pertaining to increasing water measurement accuracy at the District's production sources.

The Proposed Project upgrades sixteen existing propeller-driven water meters at the District's water production facilities to state-of-the-art electromagnetic meters for improved metering accuracy. Electromagnetic flow meters, also called mag meters or magnetic meters,

measure flow rates by employing Faraday's Law of Electromagnetic Induction. In summary, these meters measure water flow using a magnetic field that is created by running current through a coil surrounding the meter's flow tube. As water passes through the flow tube and magnetic field of the meter, a voltage is created that increases or decreases relative to the velocity of the moving water. The voltage level is sensed by the meters' electrodes and is eventually converted to volumetric flow. The main advantages of magnetic meters include:

- Increased accuracy (+/- 0.5% of reading)
- Minimal pressure-drop due to low coefficient of friction for liner materials
- Shorter straight-run pipe requirements upstream and downstream of meter
- Better response to rapid changes in flow
- Long service life
- No internal moving parts equates to low maintenance requirements
- Ability to interface with remote reading technologies such as SCADA

Among these advantages, those of utmost importance to RCWD, are the more accurate measurements of water production, the ability to remotely collect and analyze real-time water production data through an interface with the District's existing SCADA system, and the lowered maintenance requirements. Specific benefits RCWD will realize by upgrading the existing production meters include:

1. Increasing accuracy of water measurement by ~1.5% from +/- 2% to +/- 0.5%, thereby enhancing the District's ability to identify and mitigate water loss,
2. Improving RCWD's ability to quickly detect and repair system leaks through remote analysis of historical and real-time production data using the existing SCADA system, and
3. Enhancing the District's operational efficiencies by reducing costs associated with manual meter reading and maintenance

The Proposed project is not subject to the requirements of the California Environmental Quality Act (CEQA), and RCWD will collaborate with Reclamation to ensure all Federal environmental compliance is attained prior to upgrading any production meters. In addition, no permitting or design work will be required for implementation of the Proposed Project. Specific work required for Proposed Project implementation includes:

1. **Planning for Production Meter Upgrades**
   RCWD staff will plan the upgrade process with an emphasis on minimal water delivery interruption to customers.
2. **Implementing Production Meter Upgrades**
   RCWD staff will remove existing propeller driven water meters and install electromagnetic metering technology in their place. During this process, the District's water quality and distribution teams will be required to assess the areas downstream of the upgraded production meters and mitigate any pressure or quality changes.
3. **Integrating Upgraded Production Meters with SCADA System**
   District staff will connect the upgraded metering technology to its existing SCADA system for remote monitoring of water volumes and flows.

4. **Assessing Performance Measures**
   Using the upgraded production meters in conjunction with the District's existing SCADA system, District staff will monitor for flow abnormalities for the purpose of mitigating system leaks, and for detecting and repairing system leaks. Water loss reductions and reductions in maintenance costs associated with the upgraded meters will be documented.
5. **Public Demonstration**
   RCWD staff will develop materials including a summary report and a PowerPoint presentation to be used for demonstrating to neighboring and regional water agencies the benefits of the Proposed Project during regularly scheduled regional meetings.

The non-Federal cost share for the Proposed Project is already secured, and implementation of the Proposed Project is essential for increasing RCWD's capability to measure water production accurately, and for addressing the *Priority Area for Attention* identified in the District's most recent Water Loss Audit. These accuracy increases will improve the District's ability to mitigate system leaks, quickly detect and repair system leaks, and reduce costs associated with manual meter reading and maintenance.

E. Evaluation Criteria

Project Benefits

The Proposed Project upgrades sixteen existing propeller-driven water meters at the District's water production facilities to state-of-the-art electromagnetic meters. These upgraded production meters will provide more accurate measurements of water production, enable remote collection and analysis of water production data through an interface with the District's existing SCADA system, and reduce maintenance costs. Specific benefits RCWD will realize by upgrading the existing production meters include:

- ***Increasing accuracy of water measurement by ~1.5% from +/- 2% to +/- 0.5%, thereby enhancing the District's ability to identify and mitigate water loss***
  The increased accuracy of water measurement provided by the Proposed Project's upgraded production meters will allow the District to better detect abnormalities in distribution system flow conditions. Detection of these abnormalities will give RCWD the ability to perform more strategic inspections of the District's distribution system, and to make repairs that mitigate catastrophic failures within the distribution system before they occur, which would otherwise cause severe water loss and property damage.

- ***Improving RCWD's ability to quickly detect real water loss and to repair system leaks through remote analysis of historical and real-time production data using the District's existing SCADA system***
  RCWD has experienced four major mainline failures within the past eighteen months. Each of the four major failures was on a sixteen-inch line that flowed unrestricted into a high-traffic roadway for more than an hour, and were only shut down after a witness on the scene reported the leak to RCWD via a telephone call. Total water loss caused by the four failures is estimated at 7,000,000 gallons (21.5 acre feet), pipeline and road repair costs were near $2,000,000, and damage to private property was in the millions. With the ability of the upgraded production meters installed as part of the Proposed Project to connect to the District's existing SCADA system, RCWD staff will be able to detect and

react to failures such as these more quickly. For the four major failures, it is estimated that response times and unrestricted flow would have been cut in half if the upgraded production meters would have been installed, saving 3,500,000 gallons or almost 11 acre feet of water. Moreover, millions of dollars in repair costs and property damage could have been avoided.

- ***Enhancing the District's operational efficiencies by reducing costs associated with manual meter reading and maintenance***
  With its existing production meters, RCWD is required to perform annual maintenance. This requires both the purchase of materials and use of District staff time. Together materials and staff time required for maintenance of the sixteen meters come at a cost of $1,000 per meter per year, or $16,000 per year. By upgrading the existing meters, these annual maintenance costs are avoided since the newer metering technology has no internal moving part and requires no maintenance.

Other benefits include:

- ***The real water savings realized through implementation of the Proposed Project decreases RCWD's need to purchase water imported through the Colorado River Aqueduct and California's State Water Project***
  Since imported water is RCWD's most expensive source of supply, decreasing imported water purchases keeps water rates low for all District customers (including local businesses involved in agriculture, recreation, and tourism). Decreasing imported water purchases also increases water supply reliability for RCWD and all other agencies who depend on those imported water sources.

- ***The Proposed Project compliments work done in RCWD's service area in coordination with NRCS***
  The District has worked with NRCS in the past to facilitate on-farm irrigation system improvements. In fact, RCWD has worked collaboratively with farmers in the District's service area and NRCS since 2011 to facilitate more than $1,210,000 in NRCS funding through the Environmental Quality Incentives Program (EQIP) for local farmers to improve the efficiency of their irrigation systems. RCWD pursued this partnership a part of its broad Water Efficiency Program of which both this on-farm irrigation system improvement work and the Proposed Project are a part.

- ***The Proposed Project increases collaboration and information sharing among regional water mangers***
  Through implementation of the Proposed Project's Task 7: Public Demonstration, the project benefits will be communicated to neighboring and regional water agencies who will consider adopting similar practices. This increased collaboration and information sharing among regional water managers has the potential to extend the project benefits throughout the state of California.

Planning Efforts Supporting the Project

The Proposed Project is generally supported by the District's planning efforts including its Strategic Business Plan and its Urban Water Management Plan, each of which confirm RCWD's commitment to minimizing distribution system water loss and improving water supply reliability:

- ***RCWD's Strategic Business Plan***
  Calls for implementation of projects that reduce water losses (Guiding Principle 3, Strategy 7, Objective 8).

- ***RCWD's Urban Water Management Plan***
  Demonstrates the District's commitment to implementation of best management practices including projects to assess and manage distribution system losses (pages 193-196).

More specifically, the Proposed Project is consistent with the District's recently completed Water Loss Audit. This Water Loss Audit, which has a primary function similar to a System Optimization Review, was completed as per the requirements of California's Senate Bill No. 555 and with assistance provided by the California Department of Water Resources. The results of the audit (included as Appendix A) indicate that the District needs to reduce both real and apparent water loss by addressing three *Priority Areas for Attention*, including: increasing the accuracy of water measured at its own production sources, increasing the accuracy of water measured at customer delivery points, and ensuring water produced and delivered is properly billed to customers. The Proposed Project represents a significant effort aimed at addressing the *Priority Area for Attention* identified in the Water Loss Audit, which pertains to inaccuracies of water measured at the District's own production sources.

Project Implementation

The Proposed Project will be implemented through completion of seven specific tasks, which will begin on October 1, 2019, and will end October 1, 2021. The following table includes detailed information regarding each of the seven tasks along with Proposed Project timing information.

Proposed Project Tasks and Schedule

Task	Planned Start Date	Planned Completion Date
Task 1: Project Administration Execute a Financial Assistance Agreement with Reclamation, and prepare and submit invoices. Deliverables: invoices and other documentation as required per the Financial Assistance Agreement.	**10/1/19**	**10/1/21**
Task 2: Reporting Report to Reclamation on project accomplishments. Deliverables: program performance reports to be submitted as required per the Financial Assistance Agreement.	**1/31/20**	**10/1/21**
Task 3: Plan for Production Meter Upgrade Plan the upgrade process with an emphasis on minimal water delivery interruption to customers. Upgrade planning will require coordination between the construction team, water distribution operators, meter team, and the administration department. Deliverables: Meter Upgrade Plan	**12/1/19**	**2/1/20**
Task 4: Implement Production Meter Upgrades Upgrade existing District production meters with new technology. Once the meters are upgraded, water quality and distribution teams will be required to assess the area and mitigate any pressure or quality changes. Deliverables: Map indicating locations of new production meters	**2/2/20**	**5/31/20**
Task 5: Integrate Production Meters with SCADA System Perform any work required for connecting upgraded meters to SCADA system to ensure remote monitoring capabilities. Deliverables: Reports showing SCADA data transmitted by upgraded meters.	**2/2/20**	**5/31/20**
Task 6: Assess Performance Measures Using the upgraded production meters in conjunction with the District's existing SCADA system, District staff will monitor for flow abnormalities for the purpose of mitigating system leaks, and for detecting and repairing system leaks. Water loss reductions and reductions in maintenance costs associated with the upgraded meters will be documented. Deliverables: Report describing leaks detected and mitigation measures.	**6/1/20**	**6/1/21**
Task 7: Public Demonstration Develop materials including a summary report and a PowerPoint presentation to be used for demonstrating the benefits of the Proposed Project to neighboring and regional water agencies during regularly scheduled regional meetings. Deliverables: Summary report and PowerPoint presentation.	**9/1/20**	**10/1/21**

There will be no permits, new policies, or administrative actions required for implementation of the Proposed Project, and engineering work will be limited to informal input from RCWD's Engineering staff as to how production meters upgraded as part of Task 5 should be installed on existing water distribution pipes. Environmental compliance costs are anticipated to be minimal since no earth-disturbing work is anticipated. These costs have been discussed with the local Reclamation office, and have been estimated to be about $1,000.

Nexus to Reclamation

The Proposed Project will not take place on Reclamation lands; however, RCWD is associated with Reclamation's Colorado River Boulder Canyon Project – Hoover Dam. Hoover Dam helps ensure a dependable water supply for municipal, industrial, and other domestic uses in the Metropolitan Water District of Southern California (Metropolitan) service area. As member agencies of Metropolitan, Eastern Municipal Water District and Western Municipal Water District obtain a portion of their imported water from Metropolitan, which distributes that water to RCWD within Reclamation's Lower Colorado Region. Therefore, the Proposed Project will help to make more efficient use of existing water supplies within the Lower Colorado Region. In addition to benefitting water supplies managed by Reclamation, the Proposed Project's activities benefit local supplies managed by RCWD in partnership with the Pechanga Band of Luiseno Mission Indians.

Department of the Interior Priorities

The Proposed Project shares the following Department of the Interior priorities:

- *Creating a Conservation Stewardship Legacy Second Only to Teddy Roosevelt*
  The Proposed Project utilizes scientifically proven technologies to manage water more efficiently under conditions of a changing climate.
- *Utilizing Our Natural Resources*
  The Proposed Project reduces water loss and therefore reduces pumping requirements for the conveyance of imported water to southern California. Reducing pumping requirements saves energy and ensures American energy is available to meet our security and economic needs.
- *Restoring Trust with Local Communities*
  The Proposed Project's Public Demonstration component expands the lines of communication with California water agencies regarding shared priorities related to water conservation and efficiency. In addition, the Proposed Project improves public relations by promoting customer equity and keeping water rates low.
- *Striking a Regulatory Balance*
  By reducing water loss, the Proposed Project helps to reduce the potential for implementation of drought declarations and related regulatory requirements imposed upon industry and private citizens; therefore, the administrative burden of implementing these regulations is reduced.
- *Modernizing our Infrastructure*
  By upgrading the District's production meters, the Proposed Project supports technology improvements made by private industry, and therefore increases the involvement of private industry in the modernization of U.S. infrastructure with the latest water measurement technologies.

II. Project Budget

A. Funding Plan and Letters of Commitment

The Proposed Project will be funded through a combination of grant funding awarded by Reclamation and funding provided by RCWD. No in-kind contributions will be made for the completion of the Proposed Project. The non-Federal cost share for the proposed project is $90,478.75 or 55% of the total project cost. The entire cost-share will be provided by RCWD and will come from the District's annual operations budget (available July 1, 2019). The source of this budget amounts to nearly $80,000,000 and is generated by the District's water sales, monthly service charges, and other revenues. There will be no other sources of funding for the Proposed Project; therefore, no letters of commitment from additional sources are included with this proposal. Moreover, no funding has been requested or received from any other source (including Federal partners) for Proposed Project implementation. The District does not anticipate that any costs will be incurred for the Proposed Project prior to its proposed start date. The following table shows a summary of the Proposed Project's funding sources.

Total Project Cost Table

Funding Sources	**Funding Amount**
Costs to be reimbursed with requested Federal funding	$75,000.00
Costs to be paid by applicant	$90,478.75
Value of third party contributions	$0
Total Project Cost:	**$ 165,478.75**

B. Budget Proposal

Budget Item Description	Computation			Non-Federal Share	Reclamation Share	Total Cost
	Cost	Unit	Quantity			
SALARIES AND WAGES						
Senior Water Resources Planner	$ 58.93	per hour	8	$ 471.44	$ -	$ 471.44
Conservation/Water Budget Analyst	$ 44.44	per hour	32	$ 1,422.08	$ -	$ 1,422.08
Field Services Worker 1	$ 31.87	per hour	75	$ 2,390.25	$ -	$ 2,390.25
Field Services Worker 2	$ 32.35	per hour	75	$ 2,426.25	$ -	$ 2,426.25
Field Services Worker 3	$ 25.57	per hour	75	$ 1,917.75	$ -	$ 1,917.75
Field Services Worker 4	$ 31.87	per hour	75	$ 2,390.25	$ -	$ 2,390.25
Water Operations Technician	$ 39.67	per hour	30	$ 1,190.10	$ -	$ 1,190.10
Water Quality Technician	$ 41.16	per hour	10	$ 411.60	$ -	$ 411.60
Senior Accounting Analyst	$ 39.33	per hour	16	$ 629.28	$ -	$ 629.28
SUBTOTAL				$ 13,249.00	$ -	$ 13,249.00
FRINGE BENEFITS	***Basis***	***% of Basis***				
As per Federally approved Indirect Cost Rate Agreement, 83.39% of Salaries & Wages	$13,249.00	83.39%	1	$ 11,048.34	$ -	$ 11,048.34
SUBTOTAL				$ 11,048.34	$ -	$ 11,048.34
TRAVEL						
None						
EQUIPMENT						
Electromagnetic Meters	$ 7,610.00	per meter	16	$ 47,760.00	$ 74,000.00	$121,760.00
SUBTOTAL				$ 47,760.00	$ 74,000.00	$121,760.00
SUPPLIES/MATERIALS						
CONTRACTUAL/CONSTRUCTION						
SUBTOTAL						
OTHER						
Environmental & Regulatory Compliance Costs	$ 1,000.00	per review	1	$ -	$ 1,000.00	$ 1,000.00
SUBTOTAL				$ -	$ 1,000.00	$ 1,000.00
TOTAL DIRECT COSTS				$ 72,057.34	$ 75,000.00	$147,057.34
APPROVED INDIRECT COSTS*	***Basis***	***% of Basis***				
As per Federally approved Indirect Cost Rate Agreement, overhead for G&A, 139.04% of Salaries &	$13,249.00	139.04%	-	$ 18,421.41	$ -	$ 18,421.41
SUBTOTAL				$ 18,421.41	$ -	$ 18,421.41
TOTAL INDIRECT COSTS				$ 18,421.41	$ -	$ 18,421.41
TOTAL PROJECT COSTS				**$ 90,478.75**	**$ 75,000.00**	**$165,478.75**

*Indirect costs were calculated on a per permanent, full-time employee basis according to the rate paid to each employee and the number of hours worked on the Proposed Project. These hours include those in the "Salary & Wages" category of the Project Budget.

C. Budget Narrative

Salaries & Wages

Tyson Heine, RCWD's Conservation and Water Budget Analyst, will act as Project Manager for the Project. Mr. Heine has experience with managing projects funded by the US Bureau of Reclamation including various research and demonstration projects focused on exploring opportunities for water use efficiency improvements in both urban and agricultural settings. Also involved in completing the Proposed Project are the Sr. Water Resources Planner, Field Services Workers, Water Operations Technician, Water Quality Technician, and Sr. Accounting Analyst. Although salary increases are possible for these positions starting in July of 2019, the amount of the potential increases are uncertain. Therefore, hourly rates included as part of the project budget are actual current labor rates for the identified personnel and do not account for the potential increases. Following is a table that shows the direct labor rates, not including a fringe rate or fringe cost, for each of the personnel who will work on the

Proposed Project. In addition, estimated hours, percent of time, and total cost (i.e. salaries and wages) are shown for each position in the following table.

Labor Rates & Costs

Position Name	Hourly Rate	Estimated Hours	% of Time	Computation	Salaries & Wages
Senior Water Resources Planner	$ 58.93	8	0.4%	Rate of Comp. X Est. Hours	$ 471.44
Conservation/Water Budget Analyst	$ 44.44	32	1.5%	Rate of Comp. X Est. Hours	$ 1,422.08
Field Services Worker 1	$ 31.87	75	3.6%	Rate of Comp. X Est. Hours	$ 2,390.25
Field Services Worker 2	$ 32.35	75	3.6%	Rate of Comp. X Est. Hours	$ 2,426.25
Field Services Worker 3	$ 25.57	75	3.6%	Rate of Comp. X Est. Hours	$ 1,917.75
Field Services Worker 4	$ 31.87	75	3.6%	Rate of Comp. X Est. Hours	$ 2,390.25
Water Operations Technician	$ 39.67	30	1.4%	Rate of Comp. X Est. Hours	$ 1,190.10
Water Quality Technician	$ 41.16	10	0.5%	Rate of Comp. X Est. Hours	$ 411.60
Senior Accounting Analyst	$ 39.33	16	0.8%	Rate of Comp. X Est. Hours	$ 629.28
				TOTAL	$ 13,249.00

Each of the personnel involved in the Proposed Project will work on Tasks outlined in the Work Plan that are specific to their area of expertise. Following is a table that provides information explaining the number of hours that will be spent by each RCWD employee on each of the tasks described in the Proposed Project's Work Plan.

Hours per Task per RCWD Employee & Associated Costs

	Task									
	1	2	3	4	5	6	7	Total Hours	Hourly Rate	Total Cost
Position Name	Hours									
Senior Water Resources Planner	4	4	0	0	0	0	0	8	$ 58.93	$ 471.44
Conservation/Water Budget Analyst	8	8	4	0	0	8	4	32	$ 44.44	$ 1,422.08
Field Services Worker 1	0	0	0	75	0	0	0	75	$ 31.87	$ 2,390.25
Field Services Worker 2	0	0	0	75	0	0	0	75	$ 32.35	$ 2,426.25
Field Services Worker 3	0	0	0	75	0	0	0	75	$ 25.57	$ 1,917.75
Field Services Worker 4	0	0	0	75	0	0	0	75	$ 31.87	$ 2,390.25
Water Operations Technician	0	0	5	20	5	0	0	30	$ 39.67	$ 1,190.10
Water Quality Technician	0	0	0	10	0	0	0	10	$ 41.16	$ 411.60
Senior Accounting Analyst	16	0	0	0	0	0	0	16	$ 39.33	$ 629.28
								TOTAL		$13,249.00

Estimated hours spent by RCWD staff for compliance with reporting requirements are included in the preceding table under Task 2. Costs for Administrative and/or Clerical personnel are not included in the preceding table and are included as a portion of the Proposed Project's indirect costs.

Fringe Benefits
Fringe Benefits costs are equal to 83.39% of the total cost for Salary & Wages. A Federally approved rate agreement is available upon request, which provides support for this method of calculation.

Travel
There will be no travel expenses accrued as part of the Proposed Project

Equipment
Electromagnetic Meters are included as line items under "Equipment" in the budget table. Based upon quotes by manufacturers, each line item is valued in excess of $5,000. The equipment is fundamental to the goals of the Proposed Project. Without installation of the meters, the District will not gain Proposed Project benefits including increased water measurement accuracy, reduction of real water losses, and decreased operations costs.

Materials and Supplies
Materials such as paper and ink are included as indirect costs. No other materials and/or supplies are required for the Proposed Project.

Contractual
No contractual agreements will be made for implementation of the Proposed Project.

Environmental and Regulatory Compliance
A line item was included in the Project Budget under the "Environmental & Regulatory Compliance" category to account for any potential environmental and/or regulatory compliance costs. This line item is for $1,000.00, and was determined based on conversations with local Reclamation area office staff. It is anticipated that Environmental and Regulatory Compliance Costs associated with the Proposed Project will be minimal.

Other Expenses
No other expenses are expected for completion of the Proposed Project.

Indirect Costs
RCWD has an indirect cost rate approved through the U.S. Department of the Interior's National Business Center. A copy of the most recently updated, federally approved Indirect Cost Rate Agreement is available upon request. The following table lists the currently approved rates:

Indirect Cost Type	Approved Rate
Vehicle and Equipment Overhead	8.01%
General and Administrative Overhead	139.04%
Engineering Overhead	93.54%
Operations & Maintenance Overhead	21.89%

For the Proposed Project, General and Administrative Overhead applies, and was accounted for in the Project Budget. These indirect costs were calculated on a per-permanent, full-time

employee basis according to the rate paid to each employee and the number of hours worked on the Proposed Project. These hours include those in the "Salary & Wages" category of the Project Budget.

III. Environmental and Cultural Resources Compliance

The Proposed Project is a water management effort that upgrades water production meters at existing RCWD facilities. No environmental and regulatory issues are posed through its implementation. Following are answers to questions provided in the Funding Opportunity Announcement.

- **Will the Proposed Project impact the surrounding environment (e.g. soil (dust), air, water [quality and quantity], animal habitat)?** *(Describe all earth-disturbing work and any work that will affect air, water, or animal habitat in the project area. Explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts)* Proposed Project activities do not include any surface disturbance, nor do they impact the surrounding environment.
- **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?** No species listed or proposed to be listed as a Federal endangered or threatened species, or designated critical habitats are known to reside within the Proposed Project area.
- **Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States"?** No, the Proposed Project will not affect riparian habitat, including federally protected wetlands, as there are none in the project area. No associated impacts will occur and no mitigation is required.
- **When was the water delivery system constructed?** The majority of the water delivery system was constructed by the late 1980s; however, some infrastructure continues to be constructed today as the service area is being built out.
- **Will the project result in any modification of or effects to individual features of an irrigation system (e.g., head gates, canals, or flumes)?** No, the Proposed Project will not result in any modification of or effect to individual features, such as head gates, canals, or flumes, of an irrigation system.
- **Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?** There are no buildings, structures, or features listed or eligible for listing on the National Register of Historic Places within the Proposed Project sites. There are, however, at least 10 buildings in the Old Town Historic District of the City of Temecula, which is within the RCWD service area. These buildings are in the well-developed Old Town area and the Proposed Project would not affect them.
- **Are there any known archeological sites in the Proposed Project area?** No, there are no known archeological sites in the Proposed Project area.
- **Will the project have a disproportionately high and adverse effect on low income or minority populations?** No, the Proposed Project will not have any adverse effects on low income or minority populations.
- **Will the 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.
- **Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?** 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.

IV. Required Permits or Approvals

The Proposed Project requires no permits or approvals from any Federal, State, or local agencies.

V. Official Resolution

Because of the timing of RCWD's Board Meetings, an official Resolution is not available at this time. However, one will be submitted to Reclamation before May 24, 2019.

VI. Unique Entity Identifier and System for Award Management

RCWD is registered in the System for Award Management under the number 053836235, and will continue to maintain active registration.

VII. Letters of Project Support

Following are letters of project support provided by Eastern Municipal Water District and Western Municipal Water District, RCWD's two water wholesalers.

emwd EASTERN MUNICIPAL WATER DISTRICT

April 10, 2019

Rancho California Water District
Jeff Armstrong, General Manager
42135 Winchester Road
Temecula, CA 92589

Subject: Production Meter Upgrade Project

Dear Jeff Armstrong:

Eastern Municipal Water District (EMWD) commends Rancho California Water District (RCWD/District) on its plans to conduct a Production Meter Upgrade Project (Project). The Project improves water loss management by upgrading existing propeller-driven meters at the District's water production measurement sites to state-of-the-art electromagnetic meters, which read more accurately, can interface with the District's SCADA system, and require little maintenance. Specific benefits RCWD will realize by upgrading the existing production meters to electromagnetic meters include:

1. Increasing accuracy of water measurement by ~1.5% from +/- 2% to +/- 0.5%, thereby reducing potential for apparent water loss;
2. Improving RCWD's ability to quickly detect real water loss and repair system leaks through remote collection and analysis of historical and real-time production data; and
3. Enhancing the District's operational efficiencies by reducing costs associated with meter reading and maintenance.

EMWD supports RCWD's goal of optimizing water loss management and believes strongly that this goal is supported through implementation of the Production Meter Upgrade Project.

Sincerely,

Daniel Carney
Principal Water Resources Specialist

c: Justin Haessly, Rancho California Water District (via email)

2270 Trumble Road • P.O. Box 8300 • Perris, CA 92572-8300
T 951.928.3777 • F 951.928.6177 www.emwd.org

RE: RCWD Support for Reclamation Funding

Jeff Armstrong
General Manager, Rancho California Water District
42135 Winchester Rd.
Temecula, CA 92590

RE: Support RCWD's Proposal for Proposition 1 Groundwater Grant Funding

Dear Mr. Armstrong,

Western Municipal Water District (WMWD) commends Rancho California Water District (RCWD/District) on its plans to conduct a Production Meter Upgrade Project (Project). The Project improves water loss management by upgrading existing propeller-driven meters at the District's water production measurement sites to state-of-the-art electromagnetic meters, which read more accurately, can interface with the District's SCADA system, and require little maintenance. Specific benefits RCWD will realize by upgrading the existing production meters to electromagnetic meters include:

1. Increasing accuracy of water measurement by ~1.5% from +/- 2% to +/- 0.5%, thereby reducing potential for apparent water loss,
2. Improving RCWD's ability to quickly detect real water loss and repair system leaks through remote collection and analysis of historical and real-time production data, and
3. Enhancing the District's operational efficiencies by reducing costs associated with meter reading and maintenance

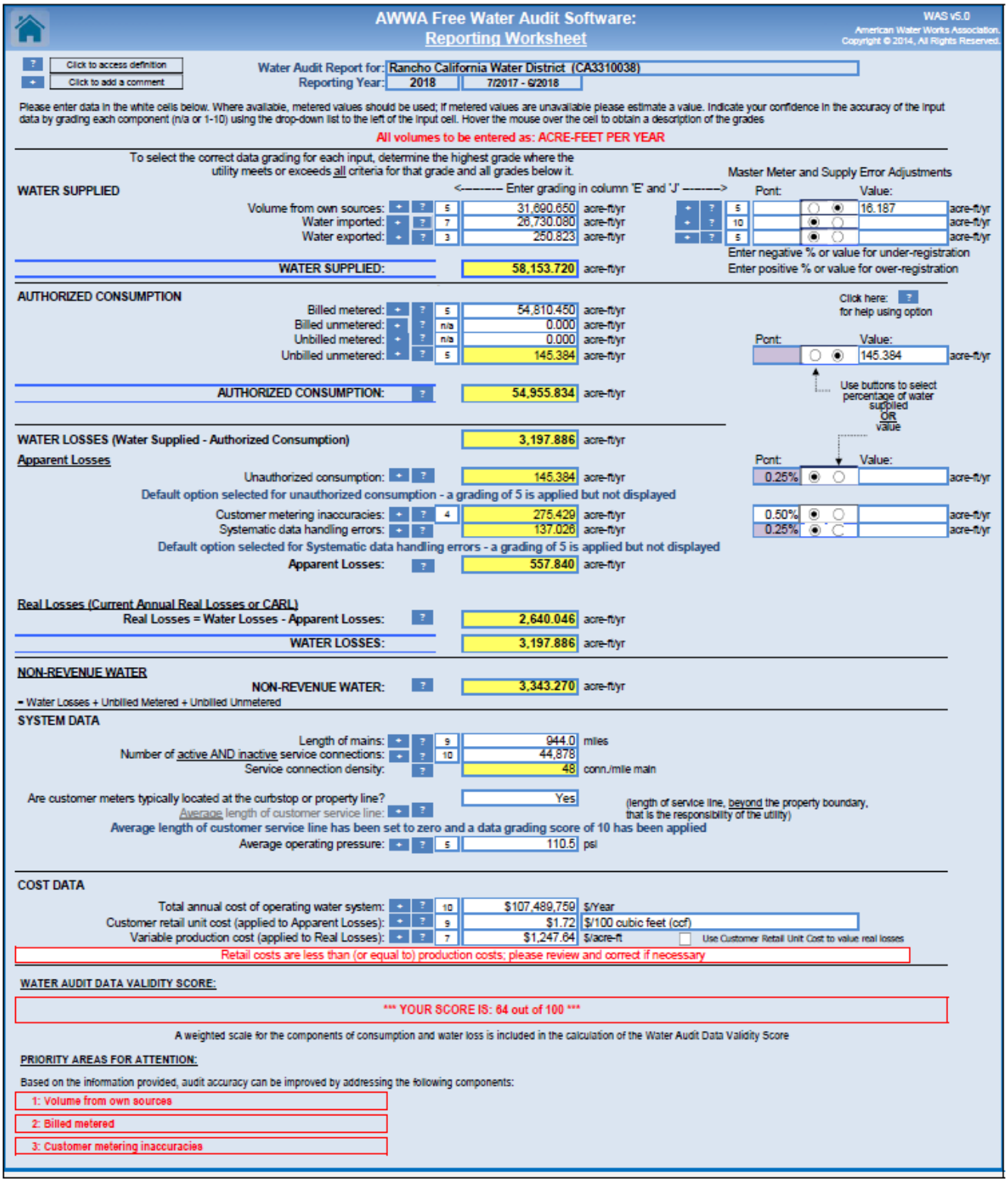
WMWD supports RCWD's goal of optimizing water loss management and believes strongly that this goal is supported through implementation of the Production Meter Upgrade Project.

Please do not hesitate to contact me at 951-571-7254 or TBarr@wmwd.com if you have any questions or need additional information.

Very Respectfully,

TIM BARR
Deputy General Manager

APPENDIX A



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
Copyright © 2014, All Rights Reserved.

Click to access definition
Click to add a comment

Water Audit Report for: Rancho California Water District (CA3310038)
Reporting Year: 2018 7/2017 - 6/2018

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED <-------- Enter grading in column 'E' and 'J' --------> Pcnt: Value:

Volume from own sources:	5	31,690.650	acre-ft/yr	5		16.187	acre-ft/yr
Water imported:	7	26,730.080	acre-ft/yr	10			acre-ft/yr
Water exported:	3	250.823	acre-ft/yr	5			acre-ft/yr
WATER SUPPLIED:		58,153.720	acre-ft/yr				

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: for help using option

				Pcnt:	Value:	
Billed metered:	5	54,810.450	acre-ft/yr			
Billed unmetered:	n/a	0.000	acre-ft/yr			
Unbilled metered:	n/a	0.000	acre-ft/yr			
Unbilled unmetered:	5	145.384	acre-ft/yr		145.384	acre-ft/yr
AUTHORIZED CONSUMPTION:		54,955.834	acre-ft/yr			

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption) 3,197.886 acre-ft/yr

Pcnt: Value:

Apparent Losses

Unauthorized consumption:		145.384	acre-ft/yr	0.25%	acre-ft/yr
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed					
Customer metering inaccuracies:	4	275.429	acre-ft/yr	0.50%	acre-ft/yr
Systematic data handling errors:		137.026	acre-ft/yr	0.25%	acre-ft/yr
Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed					
Apparent Losses:		557.840	acre-ft/yr		

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:		2,640.046	acre-ft/yr
WATER LOSSES:		3,197.886	acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER:		3,343.270	acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	9	944.0	miles	
Number of active AND inactive service connections:	10	44,878		
Service connection density:		48	conn./mile main	
Are customer meters typically located at the curbstop or property line?		Yes		(length of service line, beyond the property boundary, that is the responsibility of the utility)
Average length of customer service line:				
Average length of customer service line has been set to zero and a data grading score of 10 has been applied				
Average operating pressure:	5	110.5	psi	

COST DATA

Total annual cost of operating water system:	10	$107,489,759	$/Year	
Customer retail unit cost (applied to Apparent Losses):	9	$1.72	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	7	$1,247.64	$/acre-ft	Use Customer Retail Unit Cost to value real losses

Retail costs are less than (or equal to) production costs; please review and correct if necessary

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 64 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed metered
3: Customer metering inaccuracies

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

Water Audit Report for: Rancho California Water District (CA3310038)
Reporting Year: 2018 | 7/2017 - 6/2018

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 64 out of 100 ***

System Attributes:

	Apparent Losses:	557.840	acre-ft/yr
+	Real Losses:	2,640.046	acre-ft/yr
=	**Water Losses:**	**3,197.886**	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	1,465.35	acre-ft/yr
	Annual cost of Apparent Losses:	$417,951	
	Annual cost of Real Losses:	$3,293,827	Valued at **Variable Production Cost**

Return to Reporting Worksheet to change this assumption

Performance Indicators:

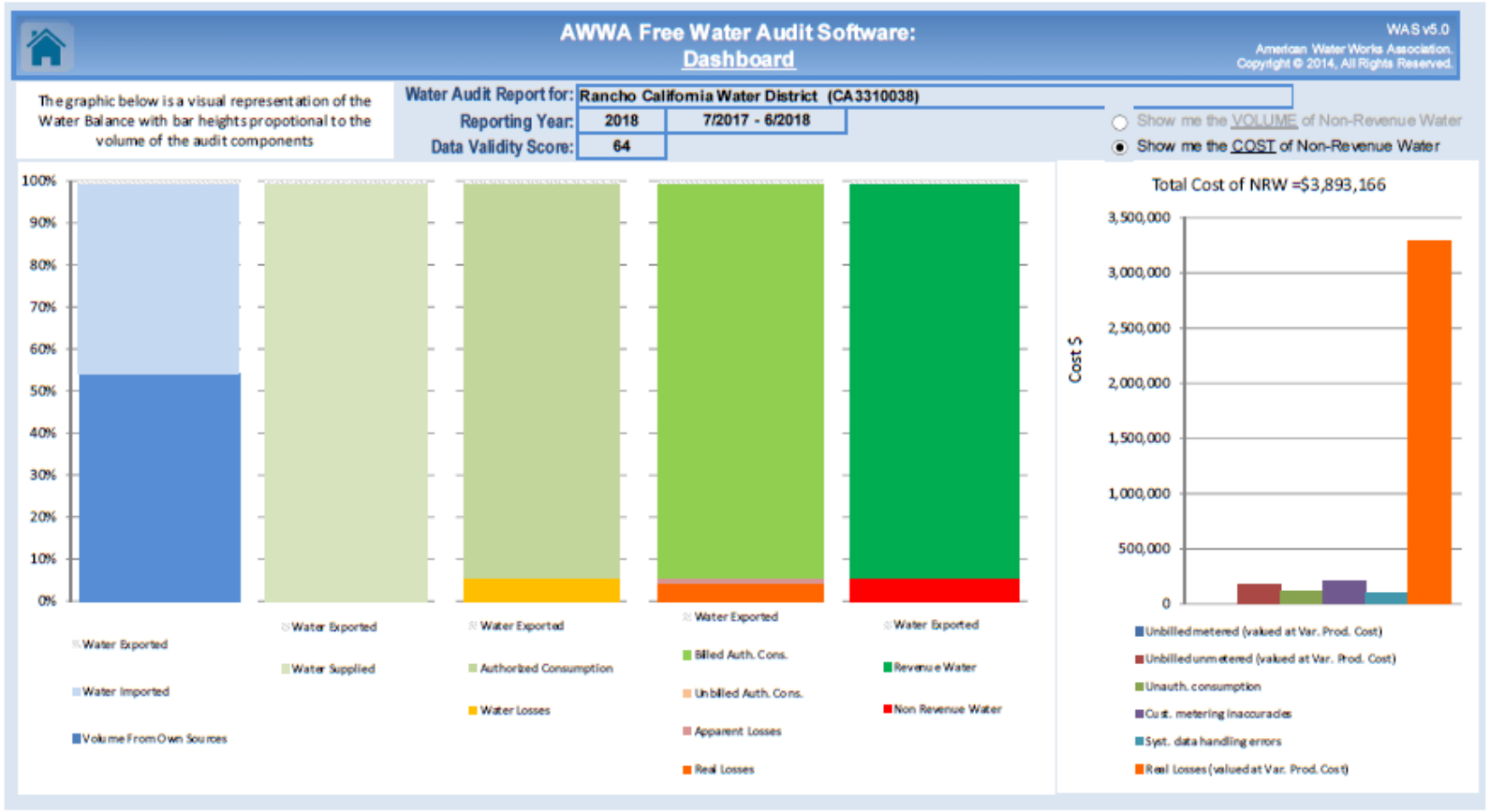
Financial:	Non-revenue water as percent by volume of Water Supplied:	5.7%	
	Non-revenue water as percent by cost of operating system:	3.6%	Real Losses valued at Variable Production Cost
Operational Efficiency:	Apparent Losses per service connection per day:	11.10	gallons/connection/day
	Real Losses per service connection per day:	52.52	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.48	gallons/connection/day/psi
	From Above, Real Losses = Current Annual Real Losses (CARL):	2,640.05	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.80	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

Water Audit Report for:	Rancho California Water District (CA3310038)	
Reporting Year:	2018	7/2017 - 6/2018
Data Validity Score:	64	

		Water Exported 250.823	Billed Water Exported			Revenue Water 250.823
Own Sources (Adjusted for known errors) 31,674.463	System Input 58,404.543	Water Supplied 58,153.720	Authorized Consumption 54,955.834	Billed Authorized Consumption 54,810.450	Billed Metered Consumption (water exported is removed) 54,810.450	Revenue Water 54,810.450
					Billed Unmetered Consumption 0.000	
				Unbilled Authorized Consumption 145.384	Unbilled Metered Consumption 0.000	Non-Revenue Water (NRW) 3,343.270
					Unbilled Unmetered Consumption 145.384	
			Water Losses 3,197.886	Apparent Losses 557.840	Unauthorized Consumption 145.384	
					Customer Metering Inaccuracies 275.429	
					Systematic Data Handling Errors 137.026	
Water Imported 26,730.080				Real Losses 2,640.046	Leakage on Transmission and/or Distribution Mains Not broken down	
					Leakage and Overflows at Utility's Storage Tanks Not broken down	
					Leakage on Service Connections Not broken down	


AWWA Free Water Audit Software:
Dashboard
WAS v5.0
American Water Works Association.
Copyright © 2014, All Rights Reserved.
The graphic below is a visual representation of the Water Balance with bar heights propotional to the volume of the audit components
Water Audit Report for: Rancho California Water District (CA3310038)
Reporting Year: 2018 7/2017 - 6/2018
Data Validity Score: 64
Show me the VOLUME of Non-Revenue Water
Show me the COST of Non-Revenue Water
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Water Exported
Water Imported
Volume From Own Sources
Water Exported
Water Supplied
Water Exported
Authorized Consumption
Water Losses
Water Exported
Billed Auth. Cons.
Unbilled Auth. Cons.
Apparent Losses
Real Losses
Water Exported
Revenue Water
Non Revenue Water
Total Cost of NRW =$3,893,166
Cost $
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Unbilled metered (valued at Var. Prod. Cost)
Unbilled unmetered (valued at Var. Prod. Cost)
Unauth. consumption
Cust. metering inaccuracies
Syst. data handling errors
Real Losses (valued at Var. Prod. Cost)

Appendix C: Certified Validation Report Template

Part A: Provided by Validator

Validator Provided

Audit Information:

Water Supplier Name: Ranch Calif. Water Dist. PWS ID: CA3310038

System Type: Potable Audit Period: FY 2017-18

Utility Representation: Jeff Kirshberg, Justin Haessly

Validation Date: 9/27/2018 Call Time: On-site meetings 9/24, 9/27 11AM Sufficient Supporting Documents Provided: Yes

Validation Findings & Confirmation Statement:

Key Audit Metrics:

Data Validity Score: 64 Data Validity Band (Level): Level III (51-70)

ILI: 1.80 Real Loss 52.52 (gal/conn /day) Apparent Loss: 11.10 (gal/conn/day)

Non-revenue water as percent of cost of operating system: 3.6 %

Certification Statement by Validator:

This water loss audit report has been Level 1 validated per the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34.

All recommendations on volume derivation and Data Validity Grades were incorporated into the water audit. [x]

Validator Information:

Water Audit Validator : Thomas A. Greene Qualifications: Water Audit Validator Certificate issued by the CA-NV Section of the AWWA

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Certified Validation Report Template, Part B: Provided by Utility

Utility Provided

Water Supplier Name: Rancho California Water District **Water Supplier ID Number:** CA3310038 **Water Audit Period:** Fiscal Year 2017/18

Water Audit & Water Loss Improvement Steps:

Utility to provide steps taken in preceding year to increase data validity, reduce real loss and apparent loss as informed by the annual validated water audit:

The Rancho California Water District (RCWD) began using existing data from our demand meters to develop SmartWorks, a software program containing algorithms which help RCWD to identify malfunctioning meters. This assists RCWD to better identify apparent water loss and avoid lost revenue. RCWD has already identified malfunctioning/stuck meters that require replacement, which has allowed the District to back-bill customers for over $500,000 to date. The District has also begun revising both production and demand meter calibration and testing policy, specifically implementing more field testing and calibration of these meters. This work effort will culminate with the development of a production meter calibration and testing program, as well as a program to test, calibrate and/or replace demand meters, including the development of a replacement program for meters that have reached the end of their useful life.

Certification Statement by Utility Executive:

This water loss audit report meets the requirements of California Code of Regulations Title 23, Division 2, Chapter 7 and the California Water Code Section 10608.34 and has been prepared in accordance with the method adopted by the American Water Works Association, as contained in their manual, *Water Audit and Loss Control Programs, Manual M36, Fourth Edition* and in the Free Water Audit Software version 5.

Executive Name (Print)	Executive Position	Signature	Date
Jeff Armstrong	General Manager		9/27/18