WATER EFFICIENCY GRANT PROGRAM

WATER CONSERVATION IMPLEMENTATION GRANT APPLICATION

June 1, 2015

Submitted to:

Colorado Water Conservation Board

Office of Water Conservation and Drought Planning

Submitted by:

Little Thompson Water District

A Covered Entity

Little Thompson Water District

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Summary

This is a water conservation implementation grant application submitted by the Little Thompson Water District (a covered entity) to the Colorado Water Conservation Board, Office of Water Conservation and Drought Planning. The Little Thompson Water District (LTWD) wishes to improve water loss management and control procedures in our service area. The first step in this process is to implement an AWWA M36 water audit which involves an audit of water supply and meter data. LTWD intends to contract with the WaterDM team which includes Water Systems Optimization (WSO) to conduct the audit and provide recommendations for additional actions LTWD might take to reduce system water loss.

The total budget for conducting the Water Loss Control audit is $26,625. The proposed budget does not include time or money for preparing this grant application. This proposal requests a planning grant from the CWCB in the amount of $17,800, which is 100% of the total consulting services budget. LTWD will contribute $8,835 in in-kind services (33% of total plan development budget) through provision of time and data during the water audit process. A detailed hour and dollar budget follows as Attachment A.

Assuming that grant funding can be provided in a timely manner, the water loss control audit, summary, and recommendations will be completed by December 31, 2015. The time line follows as Attachment B.

CWCB Water Conservation Implementation Grant Application Submittal Requirements

1. Name and contact information of entity seeking grant:

The Little Thompson Water District

Applicant: The Little Thompson Water District
835 E State Highway 56
Berthoud, CO 80513-9237

Contact: Nancy Koch
(970) 344-6344
ltwd@ltwd.org

2. Selected firm and individuals to assist in development of the Water Conservation Plan:

LTWD has selected Peter Mayer, P.E. Principal of WaterDM to conduct and manage the project along with subcontractor Reinhard Sturm of Water Systems Optimization to conduct the water loss control audit and prepare recommendations. The individuals listed below will assist in the completion of this project. The role of each individual is briefly described.

Individual, Title, and Organization	Role
Nancy Koch, Water Resources Manager, Little Thompson Water District	Project manager and primary point of contact for the City
Peter Mayer, P.E., Principal, WaterDM	Project manager, water loss control auditor, report preparation
Reinhard Sturm, Water Systems Optimization	Technical review of and input on Water Loss Control Audit and recommendations for future action
Joe Robinson (GIS Specialist), Dave Shumpert (Crew Leader)	Provision of data and water loss audit review.

3. Identification of retail water delivery and sources of water of the covered entity for past five years

Water Delivery by Customer Type, 2009 through 2013					
	Residential S/F	**Bulk**	**Non-Residential**	**Wholesale**	**Total Billed**
2013	1,161	30	341	417	1,949
2014	1,120	158	335	216	1,829

All values in MG.

LTWD obtains its water supply from the Colorado River through the Colorado-Big Thompson Project, managed by the Northern Colorado Water Conservancy District (NCWCD). LTWD also maintains metered connections with several neighboring water providers, including Central Weld County Water District, Fort Colling-Loveland Water District and the City of Loveland and Town of Berthoud. These connections provide emergency supplies and supplemental water to boost service in remote areas of the district.

LTWD jointly owns and operates two water treatment plants at the south end of Carter Lake with another special district. Collectively, the two water plants are referred to as the Carter Lake Filter Plant (CLFP). The original plant, put into service in 1961 and capable of delivering 16 million gallons of treated water per day (MGD) was recently replaced with a new facility capable of delivering to 28 MGD of treated water. The new treatment plant uses micro filtration membrane technology. The second filter plant, added in 1994 and expanded in 2000, is a direct filtration plant rated at 20 MGD. Both treatment plants re-cycle and re- filter water used to "backwash" the filter beds. LTWD relies on 50% of the total 48 MGD treatment capacity in CLFP.

4. Reasonable engineering estimate of future annual retail demand for the next five years

With the nearly 300 square miles of service area, LTWD provides water to a population of approximately 20,000 people in and around portions Berthoud, Evans, Greeley, Johnstown, Longmont, Loveland, Milliken and all of the Town of Mead. In addition, the LTWD delivers water to rural Boulder, Larimer and Weld County residences, businesses and agricultural and livestock operations.

The LTWD population is difficult to determine precisely because it provides water to many different governing entities. Census data can be obtained for counties, municipalities and even regions but not special districts. In an attempt to estimate the household and total population for the LTWD's 2012 Water Efficiency Report, 2010 Census data was obtained from the Department of Local Affairs for each of the three Counties served. LTWD average household occupancy was determined by weighting the 2010 Census data by the number of services in each county. The average 2.6 people per household was calculated and used in the report.

LTWD's reasonable engineering estimate of future annual retail demand for the next five years is shown in the table below:

Year	Projected Population	Projected AF Demand
2015	20,200	6,400
2016	20,600	6,500
2017	21,001	6,560
2018	21,421	6,850
2019	22,286	7,000

5. Background characterizing the water system, potential growth and any other pertinent issues that relate to the stated evaluation criteria.

Little Thompson Water District population, system per capita demands

Year	2009	2010	2011	2012	2013	2014
Population	18,881	18,983	19,169	19,418	19,670	19,260
System per capita water use (gpcd)	223	258	240	298	287	252

a) **Current and Past Per Capita Demand.** Per capita demand is calculated by dividing total water deliveries by service area population.

b) Past and Present Population and Forecast. The population in LTWD's service area from 2009– 2014 is presented in the table above. LTWD's population is expected to reach 21,000 by 2017, which represents an additional 1,740 people. This is a 9% increase in population over 2014.

c) Estimated Water Savings to be Achieved by Implementation. This project will not save "wet water" by itself, but rather establishes the foundation for future water savings by improving the LTWD's understanding of water losses in the supply system and identifying how these losses can be best addressed and managed in the future. LTWD currently estimates that its unaccounted for water is 10% per year. LTWD hopes to improve understanding of water loss in its service area through this process and to better understand if water losses are largely real or apparent.

d) Adequacy, Stability, and Reliability of Water System. LTWD has adequate water resources to meet water demands through 2020 and beyond. The firm yield numbers shown earlier indicate that current supply is adequate until 2028. This estimate comes from the 2011 Master Plan.

6. How will Grant Program monies be used?

The detailed scope of work below describes how the grant monies will be used to complete the Water Loss Control Audit and recommendations for LTWD.

Scope of Work

In the project the consulting team of WaterDM and WSO will use the IWA/AWWA Water Audit Method published in the AWWA Manual of Practice M36 to conduct a "top down approach" desktop water audit for LTWD. The results of the desktop audit will be reviewed by international water loss expert Reinhard Sturm of WSO. A staff member from WSO meet via teleconference with the LTWD staff and the consulting team to discuss the findings of the audit and to establish recommendations to the LTWD for next steps that can be taken to improve water loss control and management.

The **key deliverables** of this project will be:

1. Completed desktop water audit using the free AWWA Water Loss software (which is an Excel-based spreadsheet tool)
2. Brief report outlining the findings of the water audit and presenting recommendations for next steps that the LTWD can take to improve water loss management and control.
3. 50% and 75% completion reports and final report submitted to CWCB in accordance with grant requirements.

Task 1 – Conduct Desktop Water Audit

The utility water auditing process that will be implemented in this project is an internationally recognized tool for improving understanding and management of water loss, considered a best practice by the American Water Works Association. The water audit provides crucial information to a water utility that enables effective water loss control measures to be implemented in the future.

Through the water loss auditing process, LTWD will work with the WaterDM consulting team to quantify consumption and losses that occur in the distribution system and the management process of the utility.

The "top down" or desktop audit approach is the recommended first step for a water utility following the AWWA M36 procedures, and the AWWA Water Loss Control Committee has developed a truly useful and free auditing software built as an Excel spreadsheet.

Task1.1 Preliminary Meeting

Peter Mayer will meet with Nancy Koch and staff from LTWD to launch the project. At the meeting the team will review the project goals and scope of work, the project schedule, and will provide a list of the data input requirements for the desktop audit.

The essential component of the M36 water audit approach is the water balance calculation that provides a preliminary assessment of water loss. Through this process, water system input volume is divided into two fundamental categories: authorized consumption and losses. The summary results from the water balance portion of the

water audit compares distribution system input volume with the sum of customer consumption and losses (estimated or known).

Task 1.2 Data Gathering
LTWD staff will provide the WaterDM team with the reports and data necessary to complete the desktop audit. It is in this task that the LTWD will contribute in-kind value to the project.

Task 1.3 Desktop Audit
Peter Mayer will prepare the preliminary desktop audit using the data provided by LTWD. Next, Peter Mayer will conduct a working session with LTWD staff to review the preliminary audit, obtain additional information from LTWD staff, and finalize the initial audit. Once the LTWD and the consulting team have reviewed and approved the desktop audit draft, the technical review can commence.

Task 2 – Technical Review and Meetings with WSO
Reinhard Sturm, an internationally recognized water loss control expert and Vice President of Water System Optimization will review the LTWD water loss control audit prepared by WaterDM. LTWD shares a water treatment plant and multiple transmission lines with another special district. LTWD's water delivery system traverses 300 square miles. Each month the percentage (or allocation) of the water produced at the CLFP used by each district is calculated. The districts use direct measurement of water in and out of the system through master meters or by subtracting two known water usage values if there are no reconciliation meters. Additionally, the LTWD purchases and sells wholesale water to five water districts and four municipalities and provides water service to customers billed by other water providers. Sturm and Mayer will review the LTWDs' GIS map and associated database of the LTWDs' inflows/outflows through master meters and other data as they deems necessary. The consulting team and the LTWD staff will meet as needed via web conference. This group will develop recommendations for future action that can be taken to mitigate water loss, improve validity scores and to improve utility water loss management in the LTWD.

Task 3 – Report Preparation
WaterDM will prepare a brief report (5 – 10 pages) summarizing the findings of the water loss control audit and explaining the recommendations for future action. LTWD's comments and edits will be incorporated into the final report.

WaterDM and LTWD will prepare 50% and 75% completion reports in addition to the final report as required by CWCB.

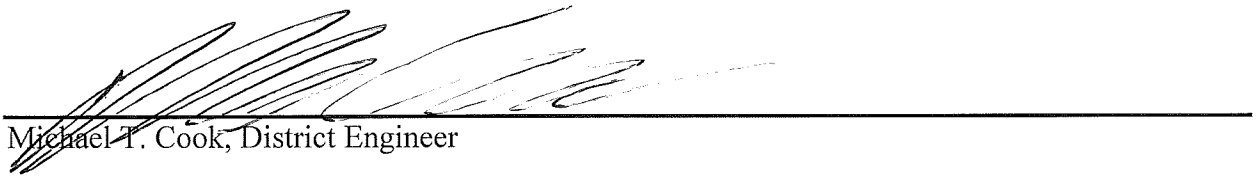
7. How will the Water Loss Control project be monitored to ensure results?

Results of this project can be monitored through the work products themselves – the completed Excel audit and the final recommendations and report.

LTWD will evaluate the recommendations of the project and determine how best to proceed with water loss control in their district.

8. Signature with authority to commit resources for the Little Thompson Water District

This grant application is approved and submitted by the Little Thompson Water District by



Michael T. Cook, District Engineer

ATTACHMENT A - PROPOSED BUDGET

Water Conservation Implementation Grant Budget Attachment A -Little Thompson Water District														
	Consulting Team					Little Thompson Water District (In-Kind*)							CWCB Grant Request	Total Project Cost
	Peter Mayer - WaterDM		Reinhard Sturm - WSO		Consultant	Nancy Koch		Joe Robinson		Dave Shumpert		Inkind Total		
Work Items	Hrs/ $175	Subtotal	Hrs/ $185	Subtotal	Cost	Hrs/ $165	Subtotal	Hrs/ $165	Subtotal	Hrs/ $150	Subtotal			
Task 1 - Conduct Desktop Water Audit														
1.1 Preliminary Meeting	8	$1,400			$1,400	2	$ 330	2	$ 330	2	$ 300	$ 960	$1,400	$ 2,360
1.2 Data Gathering	8	$1,400			$1,400	2	$ 330	4	$ 660	4	$ 600	$1,590	$1,400	$ 2,990
1.3 50% completion report to CWCB	4	$700			$700	1	$ 165		$ -		$ -	$ 165	$ 700	$865
1.3 Desktop Audit	20	$3,500			$3,500	15	$2,475	5	$ 825	5	$ 750	$4,050	$3,500	$ 7,550
1.4 75% completion report to CWCB	4	$700			$700	1	$ 165		$ -		$ -	$ 165	$ 700	$865
Subtotal	**44**	**$7,700**			**$7,700**	**21**	**$3,465**	**11**	**$1,815**	**11**	**$1,650**	**$6,930**	**$7,700**	**$14,630**
														$-
Task 2 - Technical Review Meetings with WSO	16	$2,800	30	$5,550	$8,350	5	$ 825	2	$ 330	2	$ 300	$1,455	$8,350	$ 9,805
Subtotal	**16**	**$2,800**	**30**	**$5,550**	**$8,350**	**5**	**$ 825**	**2**	**$ 330**	**2**	**$ 300**	**$1,455**	**$8,350**	**$ 9,805**
														$-
Task 3 - Final Report Preparation	10	$1,750			$1,750								$1,750	**$ 1,750**
Subtotal	**10**	$1,750			$1,750								$1,750	$ 1,750
TOTAL	**70**	**$12,250**	**30**	**$5,550**	**$17,800**	**26**	**$4,290**	**13**	**$2,145**	**13**	**$1,950**	**$8,385**	**$17,800**	**$26,185**
***District in-kind contribution = 32% of total budget.**														

ATTACHMENT B – Proposed Schedule

	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15
Task 1 - Conduct Desktop Water Audit					
1.1 Preliminary Meeting					
1.2 Data Gathering					
1.3 50% completion report to CWCB					
1.3 Desktop Audit					
1.4 75% completion report to CWCB					
Task 2 - Technical Review Meetings with WSO					
Task 3 - Final Report Preparation					