**CWCB WATER-EFFICIENCY GRANT APPLICATION SUBMITTAL REQUIREMENTS**

**PROJECT: Left Hand Water District 2011 Implementation Grant for Commercial Audits, Residential Indoor Audits and Improved Leak Detection and Repair Programs**

1. **Contact information of entity seeking grant:**

   Left Hand Water District
   Attn: Chris Smith, P.E. District Engineer
   6800 Nimbus Road
   P.O. Box 210
   Niwot, CO 80544-0210
   P: (303) 530-4200
   F: (303) 530-5252

2. **Selected firms and individuals to assist in development of the Project**

   Great Western Institute
   Tracy Bouvette
   1536 Wynkoop Street, B-500
   Denver, CO 80202
   P: (303) 605-3532

   Center for ReSource Conservation
   Jeff Woodward
   2639 Spruce Street
   Boulder, CO 80302
   P: (303) 999-3820
   F: (303) 440-0703

   American Leak Detection
   Mike Parish
   P.O. Box 27163
   Denver, CO 80227
   P: (303) 934-8325

   Tracy Bouvette of Great Western Institute (GWI) will provide commercial auditing services. Tracy has extensive experience in the field of water conservation and has built a non-profit company dedicated to this field. His experience with other commercial audits in Brighton and Pagosa Springs will provide an invaluable resource of lessons learned throughout the design and implementation of this project.

   Jeff Woodward is the Water Division Director of Center for ReSource Conservation (CRC) and will provide the residential indoor auditing service for

the District. The District is currently participating in the CRC Slow the Flow Colorado Program, which performs irrigation audits for residents of participating Colorado water providers. CRC obtained a grant in 2010 to begin an Indoor Audit Program (Slow the Flow Indoors) with the City of Lafayette and the City of Thornton. CRC will be ready to add the District's participants to their indoor audit program in 2011.

Mike Parish of American Leak Detection will provide the leak detection services along with assistance from the District's Distribution employees. American Leak Detection performs electronic leak testing in strict accordance with AWWA M36-Code for Water Audits and Leak Detection. Mike has almost forty years of experience in testing leaking systems from Montana to New Mexico. He is an experienced trainer for three state Rural Water Associations, teaching young water operators specialized methods of testing leaking water lines.

Chris Smith, P.E. is the District Engineer and will serve as the primary staff contact for this project. Chris will be paramount in the development of these implementation programs including gathering information on prior water use for targeted participants, cost estimates from contractors and insight as to how the District would like these plans structured.

Betsy Wheeler serves as a Water Conservation Specialist for the District and will provide support through her knowledge of the District's existing water conservation measures. She will assist with tracking participants and monitoring of success the project.

Todd Petry, Distribution Manager for the District, will assist Mike Parish with leak detection services. Todd has 19 years experience in the Distribution Department at the District and will coordinate all of the field work for the Improved Leak Detection Program. In addition, Todd will manage the leak repair program, and report estimates on the size of the leaks repaired to Chris Smith for incorporation into the final report.

Kathy Peterson has been with the District since 1988 and has served as the General Manager for 15 years. She is thoroughly familiar with all aspects of the District. Kathy will assist in the overall implementation of this water efficiency grant and provide a key role in its adoption within the District.

3. **Identification of retail water delivery by covered entity for past five years**:

The District has two sources of water: shares of capital stock in the Left Hand Ditch Company (LHDC) and units of Colorado-Big Thompson (CBT) water. Each share of LHDC entitles the District to direct flow diversions from Left Hand Creek as well as LHDC reservoir water. The CBT system is managed by the Northern Colorado Water Conservancy District (Northern Water).

4. **Background characterizing the local water system, potential growth and any other pertinent issues**.

**a) Current and past per capita water use for the last five years.**
Table 1 includes water use from the District's records and population estimates that are discussed in more detail in the paragraph below. Water use has been steadily increasing with some small downturns and 2009 showed a significant decrease in water use which was probably due to it being a wet year and citizens responding by decreasing irrigation. The average gallons-per-capita-per-day (gpcd) for the last five years (not including commercial, landscape, or fire/hydrant meters) is 174 gpcd.

**Table 1 - Past Five Years Water Use by Customer Category (acre-feet)**

| Category | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Residential | 2,723 | 3,225 | 3,051 | 3,078 | 2,654 |
| Commercial | 507 | 556 | 503 | 488 | 369 |
| Multi-Housing | 254 | 189 | 54 | 50 | 48 |
| Dual System | 34 | 42 | 50 | 55 | 53 |
| Landscape | 0 | 45 | 99 | 95 | 79 |
| Master Meter Communities | 40 | 58 | 208 | 200 | 190 |
| Master Fire Meters | 19 | 1 | 0 | 0 | 0 |
| Hydrant Meters | 0 | 84 | 26 | 42 | 11 |
| TOTAL USE | 3,578 | 4,200 | 3,991 | 4,008 | 3,404 |
| Population | 17,925 | 18,506 | 19,060 | 18,565 | 18,678 |
| GPCD | 178 | 203 | 187 | 193 | 163 |
| Residential GPCD | 152 | 196 | 181 | 186 | 158 |

**b) The past, current and predicted population served.**
The population for the District is difficult to determine because it is comprised of many different governing entities. Census data can be obtained for counties and municipalities, even regions, but not for special districts. To determine the population for the District, the number of households is calculated from the tap data and multiplied by the average number of people per household. This study uses 2.65 people per household, which is the average for Weld and Boulder County data. There is a discrepancy in the population data between 2007 and 2008 due to a recalculation in number of households within Multi-Housing and Master Meter Communities. The population estimates for the District are shown on Table 2.

**Table 2 - Left Hand Water District Population**

| Year | Population | Population Growth |
|---|---|---|
| 2005 | 17,925 | |
| 2006 | 18,506 | 3.2% |
| 2007 | 19,060 | 3.0% |
| 2008 | 18,565 | -2.6% |
| 2009 | 18,678 | 0.6% |
| 2010 | 18,902 | 1.2% |
| 2011 | 19,450 | 2.9% |
| 2012 | 20,014 | 2.9% |
| 2013 | 20,595 | 2.9% |
| 2014 | 21,192 | 2.9% |
| 2015 | 21,807 | 2.9% |
| 2016 | 22,439 | 2.9% |
| 2017 | 23,090 | 2.9% |
| 2018 | 23,759 | 2.9% |
| 2019 | 24,448 | 2.9% |
| 2020 | 25,157 | 2.9% |

NOTE: Discrepancy in population numbers between 2007-08 due to recalculation in number of households within Multi-Housing and Master Meter Communities.
Population estimates are a combination of latest census data (by county) and number of households (not taps) served.

**c) Estimated water savings goals to be achieved.**

The following provides additional information on the estimated water savings goals for each program:

Commercial & Industrial Audit Program: The 2008 Water Conservation Plan included a commercial and industrial audit program. As stated by Clear Water Solutions, Inc. in the 2008 Water Conservation Plan, the top 17 commercial/industrial taps used a combined 66,418,333 gallons in 2007 (203 acre-feet). By targeting the commercial users shown in Appendix A (Table A-1), there is a potential for yielding a five percent savings of average annual use or 5.4 acre-feet per year. This 5.4 acre-foot annual savings would represent 12 percent of the annual 2008 Water Conservation Plan goal for reduction in the Commercial water use category (ten-year annual reduction goal = 46 acre-feet per year).

Residential Indoor Water Audit Program: According to estimates provided in the District's 2008 Water Conservation Plan, an indoor

water audit program is estimated to save five percent of the average annual use per participant (179,000 gal/yr). With 100 participants, the estimated annual savings for this program is 895,000 or (2.7 acre-feet/yr), which represents approximately 0.7 percent of the annual 2008 Water Conservation Goal for reduction in the Residential water use category (ten-year annual reduction goal = 415 acre-feet per year). Actual water saving will be evaluated for the participants.

Improved Leak Detection and Repair Program: Based on estimates from American Leak Detection for other municipal systems along the Front Range, it is assumed that there will be 15 leaks per 100 miles at five gallons per minute (gpm) and one out of every five hydrants at 1.5 gpm. This would equate to a potential savings of 81 acre-feet per year, which represents approximately 36 percent of the annual 2008 Water Conservation Goal for reduction in Unaccounted-for Losses (ten-year annual reduction goal = 222 acre-feet per year).

**d) Estimates of water savings realized in the past five years through water conservation.**

The District had already implemented water conservation measures before completing its Water Conservation Plan that was approved by CWCB in 2009. These measures included:

- Water Wise Demonstration Garden
- Xeriscape Gardening Classes
- Promotion of raw water to be used for irrigation within the District
- Aggressive Leak Detection and Repair program
- Meter replacement every five years for commercial and ten years for residential
- Billing software that identifies high water use by individual accounts and puts in an automatic work order to check for a leak
- Leak Credit Policy which encourages quick repair on the customer's side of the meter
- Replacement Fund program for pipeline and valve leak repair
- Public information in billing and newsletter
- Dry period water restrictions that range from voluntary to mandatory
- Encouraged modification of landscaping requirements in Boulder County to include low water use sod, less sod per landscape area and xeric and water wise plants.

Since the Water Conservation Plan has been approved, the District has proactively repaired 31 valves to improve their leak detection (estimated savings ~3.9 MG/yr), upgraded 31 commercial meters to obtain more accurate readings, developed an irrigation audit program through CRC, offered rebates for wind and rain sensor as well as

outdoor sprinkler system controls, developed a water conservation section as part of their website, offered four water wise gardening classes, and developed a rebate program for low-flow toilets and high-efficiency clothes washers. Previous implementation of leak detection and repair measures has brought down the unaccounted-for losses from above 15 percent to 6.5 percent. See Table 3 for a detailed list of the savings from the past five years.

**Table 3 - District Water Savings from Past Five Years of Water Conservation Activities**

| Measure/Program | *No. of rebates/ audits* | *Estimated Annual ac-ft of Savings* | *No. of Years Implemented* | *Estimated Total Savings (ac-ft)* | *NOTES* |
|---|---|---|---|---|---|
| Existing Xeriscape Programs- Demo Garden & Xeric classes | | 1.5 | 5 | 7.7 | Program is being fully implemented. |
| Existing Leak Detection & Repair | | 170.3 | 5 | 851.6 | 5% savings on produced water; Reduced 16.5% losses to 6.5% = 55.5MG |
| Improved Leak Detection and Repair | | 10.4 | 1 | 10.4 | 0.3% savings of produced water = 3.39MG |
| Irrigation Audit Program- HOA Audits | 2 | 0.7 | 1 | 0.7 | Assume 20% savings from average irrigation tap use (548,000 gallons) |
| Irrigation Audit Program- Residential Audits | 41 | 0.6 | 1 | 0.6 | Assume annual participation of 163 and 5% savings of ave. household use (179,000 gal). Outdoor component is 52%. |
| Wind & Rain Sensor Rebates/Outdoor Controls | 0 | 0.0 | 1 | 0.0 | Program offered- none taken |
| Updated Website/ Public Info in Billing & Newsletter | | 68.1 | 5 | 340.4 | 2% savings of 2009 Water Use (3,404 AF) |
| Children's Water Festivals | | 34.0 | 5 | 170.2 | 1% savings of 2009 Water Use (3,404 AF) |
| Rebate for low flow toilets | 55 | 2.0 | 1 | 2.0 | Assume 2.4 gal savings per flush, 5.1 flush per person per day and 2.65 people per household |
| Rebate for clothes washers | 52 | 0.9 | 1 | 0.9 | Assume 16 gallons saved per load, 0.37 loads per person per day and 2.65 people per household |
| **Total** | | **288.5** | | **1,384.4** | |

**e) Adequacy, stability, and reliability of water system.**

The District is a quasi-municipal corporation and subdivision of the State of Colorado that was formed by election in 1990 to issue bonds to purchase all tangible and intangible assets of the Left Hand Water Supply Company (Water Company). The Water Company was formed from an association of farmers and landowners in the early 1960's to apply for loans to build a water system to bring clean water to the rural areas of Boulder and Weld Counties. Seven Board members that are elected to alternating four-year terms govern the District. The Board is responsible for the overall management and administration of the affairs of the District. A staff of over 20 members led by a Board-appointed District Manager conducts the day-to-day operations.

The District lies in Boulder and Weld County northwest of the Denver Metro area and provides potable and fire protection water to a service area of more than 130 square miles. The District also provides direct water service by agreement to the Town of Frederick and businesses within the District's service area.

The District has two sources of water, LHDC shares and CBT units. The water is filtered at two filtration facilities with a total rated capacity of 15.5 MGD. The water is delivered to the customers by gravity and/or booster pumping stations through approximately 250 miles of distribution lines ranging in diameter from one inch to 30 inches. The District has 14.5 MG of storage capacity, which is within the industry standard of one day's peak flow for emergencies, equalization or fire flows.

5. **Project Scope and Tasks**

See Appendix A – Commercial Audit Project Description
See Appendix B – Residential Indoor Audit Project Description
See Appendix C – Improved Leak Detection & Repair Project Description

6. **Project Schedules**

See Attached Table 4

7. **Project Budgets and Funding Sources**

See attached Table 5

8. **Commitment of Resources**

The District intends to use the grant money to create three water conservation programs: commercial audits, residential indoor audits and improved leak detection and repair. These programs will help the District achieve the water-savings goals outlined in its 2008 Water Conservation Plan.

"The District Board is committed to water resource sustainability and water conservation. The District intends to do its part to preserve water for future generations. Both staff and the Board understand the needs and benefits to implement long-term water conservation measures. We are committed to implementing the water conservation programs."

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Kathy Peterson, District Manager

## Table 4 – Left Hand Water District Implementation Grant Schedule

Left Hand Water District Board meets on Thursday following the second Tuesday of each month at 9:00am.

**Residential Indoor Water Audit Program**

| Task | Date |
|---|---|
| Grant application submitted to CWCB | 1/14/2011 |
| CWCB approves grant and PO issued | 5/14/2011 |
| Development of Indoor Water Audit Program promotional materials & update website | 7/11/2011 |
| Mailings to selected subdivisions | 8/11/2011 |
| Compile a list of residents that have requested to participate & past water use data for participating residents | 10/15/2011 |
| Pre-Audit Meeting with CRC | 10/31/2011 |
| Assemble participation packets and purchase faucet aerators and showerheads | 11/14/2011 |
| Complete Indoor Audit (performed by CRC) | 1/14/2012 |
| Post-Audit Meeting with CRC for Indoor Audit Program | 1/15/2012 |
| Obtain CRC report (summarizing all audits) | 12/31/2011 |
| Develop follow-up survey & mail to participants | 4/14/2012 |
| Complete water use data tracking and analysis | 1/13/2013 |
| Complete final report documenting activities and savings | 2/12/2013 |
| Presentation to District Board and final adoption of program | 2/14/2013 |

**Improved Leak Detection and Repair Program**

| Task | Date |
|---|---|
| Grant application submitted to CWCB | 1/14/2011 |
| CWCB approves grant and PO issued | 5/14/2011 |
| Complete pre-survey meeting, contract with ALD, and provide ALD with info | 6/13/2011 |
| Complete leak detection survey | 7/15/2011 |
| Compile leak detection survey results and determine repair schedule | 8/14/2011 |
| Complete leak repairs | 9/30/2011 |
| Analyze water savings | 3/28/2012 |
| Complete final report documenting activities and savings | 4/27/2012 |
| Presentation to District Board and final adoption of program | 5/10/2012 |

**Commercial Water Audit Program**

| Task | Date |
|---|---|
| Grant application submitted to CWCB | 1/14/2011 |
| CWCB approves grant and PO issued | 5/14/2011 |
| Obtain and review water used data | 6/13/2011 |
| Development of Indoor Water Audit Program promotional materials & update website | 6/13/2011 |
| Contact commercial water customers and schedule site visits | 7/13/2011 |
| Order high efficiency water fixtures | 7/28/2011 |
| Conduct site visits and replace fixtures | 11/25/2011 |
| Follow-up to site visits | 2/23/2012 |
| Collection and analysis to pre- and post-water use data | 11/24/2012 |
| Prepare draft report for LHWD | 3/24/2013 |
| Prepare final report for LHWD | 7/22/2013 |
| Presentation to District Board and final adoption of program | 8/15/2013 |

**Program Reporting**

| Task | Date |
|---|---|
| 50% Progress Report | 8/14/2011 |
| 75% Progress Report | 6/15/2012 |
| Final Report | 8/22/2013 |

**Table 5 - Project Fee Estimate**
**Left Hand Water District Implementation Grant**

| APPENDIX | TASKS | DESCRIPTION | GWI - Tracy Bouvette HOURS $110 | GWI - Tracy Bouvette SUB TOTAL | GWI - Assistant HOURS $55 | GWI - Assistant SUB TOTAL | CRC HOURS $66 | CRC SUB TOTAL | ALD - Mike Parish SUB TOTAL | LHWD - Kathy Peterson HOURS $140 | LHWD - Kathy Peterson SUB TOTAL | LHWD- Chris Smith HOURS $112 | LHWD- Chris Smith SUB TOTAL | LHWD- Betsy Wheeler HOURS $64 | LHWD- Betsy Wheeler SUB TOTAL | LHWD- Todd Petry HOURS $93 | LHWD- Todd Petry SUB TOTAL | LHWD- Utility Locate Technician HOURS $69 | LHWD- Utility Locate Technician SUB TOTAL | LHWD- Distribution Technician HOURS $68 | LHWD- Distribution Technician SUB TOTAL | Non-labor Costs Total | District Cash Contribution | In-Kind Matching Percentage | Project Total | CWCB Grant Request |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Commercial Water Audit Program** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Appendix A** | 1.1 | Obtain and Review Water Use Data | 2 | $220 | 4 | $220 | | $0 | $0 | | $0 | | $0 | 4 | $258 | | $0 | | $0 | | $0 | | | | $698 | $440 |
| | 1.2 | Commercial Water Audit Website Update | 0 | $0 | 0 | $0 | | $0 | $0 | | $0 | 2 | $223 | 4 | $258 | | $0 | | $0 | | $0 | | $500 | | $981 | $0 |
| | 1.3 | Contact Commercial Water Customers - Schedule Visits | 0 | $0 | 5 | $275 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | | | $275 | $275 |
| | 1.4 | Order High Efficiency Water Fixtures | 2 | $220 | 4 | $220 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | $100 | | | $540 | $540 |
| | 1.5 | Conduct Site Visits | 20 | $2,200 | 20 | $1,100 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | $200 | | | $3,500 | $3,500 |
| | 1.6 | Replace Fixtures | 20 | $2,200 | 20 | $1,100 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | $7,678 | | | $10,978 | $10,978 |
| | 1.7 | Collection and Analysis of Pre- and Post-Water Use Data | 16 | $1,760 | 30 | $1,650 | | $0 | $0 | | $0 | | $0 | 4 | $258 | | $0 | | $0 | | $0 | $200 | | | $3,868 | $3,610 |
| | 1.8 | Follow-up to Site Visits | 12 | $1,320 | 8 | $440 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | | | $1,760 | $1,760 |
| | | **Sub-Total** | **$7,920** | | **$5,005** | | **$0** | | **$0** | **$0** | | **$223** | | **$773** | | **$0** | | **$0** | | **$0** | | **$8,178** | **$500** | **7%** | **$22,600** | **$21,103** |
| **Residential Indoor Water Audit Program** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Appendix B** | 1.1 | Development of Indoor Water Audit Program Promotional Materials | | $0 | | $0 | | $0 | $0 | 2 | $281 | 2 | $223 | 4 | $258 | | $0 | | $0 | | $0 | | | | $762 | $0 |
| | 1.1 & 1.2 | Printing and Production- brochures, promo materials etc. | | $0 | | $0 | | $0 | $0 | | $0 | 4 | $447 | 8 | $516 | | $0 | | $0 | | $0 | | | | $962 | $0 |
| | 1.1 & 1.2 | Mailings to Selected Subdivisions for Indoor Water Audit Program | | $0 | | $0 | | | $0 | | | 4 | $447 | 4 | $258 | | $0 | | $0 | | $0 | | | | $704 | $0 |
| | 1.3 | Indoor Water Audit Website Update | | $0 | | $0 | | $0 | $0 | | $0 | 2 | $223 | 4 | $258 | | $0 | | $0 | | $0 | | $500 | | $981 | $0 |
| | 1.4 & 1.5 | Indoor Water Audit Participant Management and Historic Data Compilation | | $0 | | $0 | | $0 | $0 | | $0 | 2 | $223 | 4 | $258 | | $0 | | $0 | | $0 | | | | $481 | $0 |
| | 2.1 | Pre-Audit Meeting with CRC for Indoor Audit Program | | $0 | | $0 | | $0 | $0 | 1 | $140 | 2 | $223 | 2 | $129 | | $0 | | $0 | | $0 | | | | $493 | $0 |
| | 2.2 | Assemble Indoor Audit Program Participation Packet | | $0 | | $0 | | $0 | $0 | | $0 | | $0 | 2 | $129 | | $0 | | $0 | | $0 | | | | $129 | $0 |
| | 2.3 | Purchase faucet aerators and showerheads for Indoor Audit Program Retrofit | | $0 | | $0 | | $0 | $0 | | $0 | 2 | $223 | 2 | $129 | | $0 | | $0 | | $0 | $3,783 | | | $4,135 | $3,783 |
| | 2.4, 2.5, & 3.2 | Indoor Audit (performed by CRC) | | $0 | | $0 | 100 | $6,550 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | | | $6,550 | $6,550 |
| | 2.6 | Post-Audit Meeting with CRC for Indoor Audit Program | | $0 | | $0 | | $0 | $0 | 1 | $140 | 2 | $223 | 2 | $129 | | $0 | | $0 | | $0 | | | | $493 | $0 |
| | 3.1 | Indoor Audit follow-up survey | | $0 | | $0 | | $0 | $0 | 2 | $281 | 8 | $893 | 8 | $516 | | $0 | | $0 | | $0 | | | | $1,690 | $0 |
| | 3.3 & 3.4 | Indoor Audit water use data tracking and analysis | | $0 | | $0 | | $0 | $0 | 4 | $562 | 10 | $1,117 | 20 | $1,289 | | $0 | | $0 | | $0 | | | | $2,967 | $0 |
| | | **Sub-Total** | **$0** | | **$0** | | **$6,550** | | **$0** | **$1,404** | | **$4,243** | | **$3,867** | | **$0** | | **$0** | | **$0** | **$3,783** | **$500** | **49%** | **$20,347** | **$10,333** |
| **Improved Leak Detection and Repair Program** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Appendix C** | 1.2 | Pre-Survey Meeting with ALD | | $0 | | $0 | | $0 | $0 | | $0 | 2 | $223 | | $0 | 2 | $186 | 2 | $186 | 2 | $186 | | | | $780 | $0 |
| | 1.3 | ALD Assistance (before and during survey) | | $0 | | $0 | | $0 | $0 | | $0 | 10 | $1,117 | | $0 | 8 | $742 | 56 | $5,197 | 64 | $5,939 | | | | $12,995 | $0 |
| | 1.4 | Leak Detection Survey (performed by ALD) | | $0 | | $0 | | $0 | $10,000 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | | | $10,000 | $10,000 |
| | 1.5 & 2.1 | Leak Detection Survey Data Analysis | | $0 | | $0 | | $0 | $0 | 1 | $140 | 20 | $2,233 | | $0 | 20 | $1,856 | | $0 | | $0 | | | | $4,229 | $0 |
| | | Make Repairs | | $0 | | $0 | | $0 | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | $0 | | | | $0 | $0 |
| | | **Sub-Total** | **$0** | | **$0** | | **$0** | | **$10,000** | **$140** | | **$3,573** | | **$0** | | **$2,784** | | **$5,382** | | **$6,125** | **$0** | **$0** | **64%** | **$28,004** | **$10,000** |
| **Program Reporting** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Appendix D** | 1.1 | 50% progress report | 2 | $220 | 0 | $0 | | $0 | $0 | 0 | $0 | 2 | $223 | 2 | $129 | | $0 | | $0 | | $0 | | | | $572 | $220 |
| | 2.1 | 75% progress report | 2 | $220 | 0 | $0 | | $0 | $0 | 0 | $0 | 2 | $223 | 2 | $129 | | $0 | | $0 | | $0 | | | | $572 | $220 |
| | 3.1 | Prepare the Final Report | 16 | $1,760 | 20 | $2,200 | | $0 | $0 | 4 | $562 | 30 | $3,350 | 20 | $1,289 | 4 | $371 | | $0 | | $0 | | | | $9,531 | $3,960 |
| | | **Sub-Total** | **$2,200** | | **$2,200** | | **$0** | | **$0** | **$562** | | **$3,796** | | **$1,547** | | **$371** | | **$0** | | **$0** | **$0** | **$0** | **59%** | **$10,676** | **$4,400** |
| | | **Total** | 92 | **$10,120** | 111 | **$7,205** | 100 | **$6,550** | **$10,000** | 15 | **$2,106** | 106 | **$11,835** | 96 | **$6,187** | 34 | **$3,155** | 58 | **$5,382** | 66 | **$6,125** | **$11,961** | **$1,000** | **44%** | **$81,626** | **$45,836** |

## APPENDIX A - DESCRIPTION FOR COMMERCIAL AUDIT PROGRAM

The District will work with Great Western Institute (GWI) to conduct water audits for commercial and industrial customers within the District. Water audit programs for commercial customers and information on potential saving from installation of highly efficient fixtures will provide measurable water savings for targeted high water users. Showerheads and faucet aerators will be replaced as part of this program and businesses will be strongly encouraged to participate in the District's existing toilet rebate program.

The audit program will include collecting information for the entire facility – indoor and outdoor. These audits will include visiting and characterizing water use in individual rooms, laundry and housekeeping facilities, cooling and heating systems, ice machines, swimming pools, and kitchens. During the audit, shower, toilet and faucet flow rates will be measured (as appropriate). Outdoor irrigation practices will be reviewed, including estimates of outdoor water use and demand, to determine if irrigation practices are consistent with the needs of the landscape. Educational materials will be provided and discussed with the property owners and/or managers regarding water conservation practices. Commercial audits will be prioritized by total water use and customer willingness to provide access. The grant will also be used to purchase and install water efficient showerheads and aerators for participating commercial customers.

The 2008 Water Conservation Plan included a commercial and industrial audit program. As stated by Clear Water Solutions (CWS) in the 2008 Water Conservation Plan, the top 17 commercial/industrial taps used a combined 66,418,333 gallons in 2007 (203 acre-feet). By targeting the commercial users shown on the attached Table A-1, there is a potential for yielding a five percent savings of average annual use or 5.4 acre-feet per year. This 5.4 acre-foot annual savings would represent 12 percent of the annual 2008 Water Conservation Plan goal for reduction in the Commercial water use category (ten-year annual reduction goal = 46 acre-feet per year).

The District will track individual customer water use before and after the audits and the retrofit installations to help characterize the value and effectiveness of these specific water conservation measures and programs. Any water savings measured will be identified and discussed in the final commercial audit program report.

The Commercial Audit Program can be broken down into the following tasks:

1. Conduct Commercial Audits and Replace Inefficient Fixtures
2. Reporting and measuring success

## TASK 1 – Conduct Commercial Audits and Replace Inefficient Fixtures

### Purpose

The activities described under this task will include screening and selecting commercial businesses, conducting the audits, installing high efficiency fixtures and measuring pre- and post-audit water usage.

### Subtasks

1.1 Obtain and review water use data – GWI along with the District will review past and current water use data for commercial restaurants and motels including monthly and annual water use. Select candidate commercial customers for the water audits. (Note that based on a review of current water use, five motels and eleven restaurants have been identified for the commercial audits. The audits that will be performed as a result of the proposed grant may change once the grant is awarded).

1.2 The District will update the District's website with information to promote and publicize the audit program.

1.3 GWI will contact candidate commercial water users and schedule audits and fixture replacement efforts.

1.4 Order high efficiency water fixtures – Prior to the site visits, showerheads and faucet aerators will be ordered by GWI. The number of fixtures to be ordered is provided in Table A-1.

1.5 Conduct site visits – GWI will conduct site visits to inventory types of water use and equipment, and identify areas of potential water savings. These audits will include visiting individual rooms, laundry and housekeeping facilities, cooling and heating systems, ice machines, swimming pools, and kitchens. During the audit, shower, toilet and faucet flow rates will be measured (as appropriate). Outdoor irrigation practices will be reviewed, including estimates of outdoor water use and demand, to determine if irrigation practices are consistent with the need of the landscape.

1.6 Replace fixtures – To the extent practical, showerheads and faucet aerators will be installed during the site visits by GWI. The replaced showerheads and faucet aerators will be collected and disposed of appropriately.

1.7 Collection and analysis of pre- and post-water use data – GWI will work with the District to collect monthly data regarding post-audit water use. GWI will analyze the data to characterize individual commercial water use patterns, to quantify water savings realized from the replacement showerheads and faucet aerators, and to identify other potential water saving opportunities.

1.8 Follow-up to site visits – once the site visits and fixture replacements have occurred, GWI will present each business owner with a brief report detailing the findings of the audit, providing the owner with an inventory of the water use and the water and related energy savings that will be realized with those fixtures installed as a result of this program. The business owner will also be provided with a cost-benefit analysis of other fixtures replacements and changes in water use behavior that they may choose to implement. Educational information will also be provided at this time.

## Task Responsibilities

**District**
Support Great Western Institute's efforts to publicize and conduct the audits and install the high-efficiency fixtures. The District will provide access to monthly and annual water use data for past and current periods.

**Great Western Institute**
Analyze data and develop applicable worksheets. Coordinate purchase and shipping of showerhead fixtures and faucet aerators. Schedule and conduct site visits and when applicable and appropriate install high-efficiency fixtures. Conduct customer follow-up. Costs currently have been included to replace all of the faucet aerators and showerheads expected to be found in four motels, and all appropriate kitchen (those used for hand washing rather than pots and pans) and bath faucet aerators found in 11 restaurants. A summary is provided in Table A-1.

## Task Deliverables

- Great Western Institute will prepare water model to be used for characterizing future water savings.
- The District will complete website updates with information to promote the audit program.

### TASK 2- Reporting

## Purpose

The activities described under this task will be used to develop and complete all project reporting.

## Subtasks

2.1 GWI will prepare and complete 50 percent progress report per CWCB requirements including discussion of project status, project success and obstacles, and potential budget and schedule impacts.

2.2 GWI will prepare and complete 75 percent progress report per CWCB requirements including discussion of project status, project success and obstacles, and potential budget and schedule impacts.

2.3 GWI and the District will prepare the draft report- compile information, data and other content into Draft Report for review and comment. Produce three (3) hardcopies and one electronic copy for District review.

2.4 Prepare Final Report- GWI will finalize the report based on comments received from the District and District Board and produce.

2.5 Board presentations- The District will provide the Board with an update during project execution and an overview of the findings after the Draft Report has been prepared and reviewed by the District.

## Task Responsibilities

**District**
Assemble data and other information needed for subtask completion. Assist in preparing the draft report and review draft work products and provide feedback to Great Western Institute. Additionally the District will provide the Board with project updates and an overview of findings at completion of the program.

**Great Western Institute**
Make data requests to the District and locate additional data as needed. Review and provide feedback to the District on the quality and accuracy of data. Analyze data and develop text tables, figures, and applicable worksheets. Prepare and finalize Project Reports (including the 50 percent and 75 percent progress reports).

## Task Deliverables

- Monthly invoices and progress report for the District.
- Draft and Final Project Reports.

## Table A-1- Summary of Potential Commercial Water Audits and Retrofits

| Name | Address | Phone | Showerheads | Faucet Aerators | Estimated Potential Water Savings (gpy) | Estimated Hardware Costs |
|---|---|---|---|---|---|---|
| **Lodging** | | | | | | |
| First Interstate Inn | 3940 Colorado 119 Longmont, CO 80504-9542 | 303.772.6000 | 50* | 50* | 275,000 | $ 1,731 |
| Super 8 Motel | 10805 Turner Blvd Longmont, CO 80504-9578 | 303.772.0888 | 0 | 96 | 28,800 | $ 155 |
| America's Best Value Inn | 3815 Colorado 119 Longmont, CO 80504 | 303.776.8700 | 71 | 71 | 390,500 | $ 2,457 |
| Days Inn Longmont | 3820 Colorado 119 Longmont, CO 80504 | 303.651.6999 | 40 | 40 | 220,000 | $ 1,384 |
| Comfort Inn Hotel | 10811 I25 Access Road Longmont, CO 80504 | 303.684.6779 | 52 | 52 | 286,000 | $ 1,800 |
| **Restaurants** | | | | | | |
| Greenbriar Inn | 8735 N. Foothills Hwy Boulder, CO 80302 | 303.440.7979 | 0 | 12 | 79,400 | $ 19 |
| Colterra | 210 Franklin St, Niwot, CO 80544 | 303.652.0777 | 0 | 12* | 79,400 | $ 19 |
| Restaurant 1 | 7960 Niwot Rd #3 Longmont, CO 80503 | | 0 | 8* | 49,800 | $ 13 |
| Restaurant 2 | 7960 Niwot Rd #4 Longmont, CO 80503 | | 0 | 8* | 49,800 | $ 13 |
| Saichi Sushi | 7980 Niwot Rd #4 Longmont, CO 80503-7149 | 303.652.0152 | 0 | 8* | 49,800 | $ 19 |
| Pepper Jacks | 3768 Colorado 52, Erie, CO 80516-9482 | 303.833.4758 | 0 | 12* | 79,400 | $ 19 |
| Taco Bell #3768 | 3818 HWY 119, Longmont, CO 80504 | 303.678.5053 | 0 | 6* | 35,000 | $ 10 |
| Arby's | 10809 Turner Blvd Longmont, CO 80504 | 303.682.8938 | 0 | 6* | 35,000 | $ 10 |
| Subway | 3851 Hwy 119, Longmont, CO 80504 | 303.682.5475 | 0 | 6* | 35,000 | $ 10 |
| McDonalds | 10863 W I-25 Frontage Rd. Longmont, CO 80504 | 303.651.9608 | 0 | 6* | 35,000 | $ 10 |
| McDonalds | 3650 Hwy 52, Erie, CO 80516-9406 | 303.833.5366 | 0 | 6* | 35,000 | $ 10 |
| | | **Total** | **213** | **399** | **1,762,900** | **$ 7,678** |

* Estimated amount of existing fixtures to be replaced

## APPENDIX B - DESCRIPTION OF RESIDENTIAL INDOOR WATER AUDIT PROGRAM

The District will work with the Center for ReSource Conservation (CRC) to conduct indoor water audits for residents within the District. These audits will include a systematic accounting of water uses by residents and help to identify potential opportunities for water-use reduction through efficiency measures or improvements.

The 2008 Water Conservation Plan included a self-guided internet based residential water audit program. In 2009 and 2010, the District teamed with CRC by participating in "*Slow the Flow Colorado"* for residential irrigation audits and is proposing to advance these on-site audits through a new CRC program called *"Slow the Flow Indoors." "Slow the Flow Indoors"* is an indoor water use inspection program performed by trained auditors. CRC is performing these indoor audits for other water providers such as the Cities of Thornton and Lafayette.

In order to maximize the effectiveness of the indoor audits, the District is proposing to target older subdivisions that are more likely to have high water use fixtures. The District has identified two subdivisions with homes built from the 1960's through the 1980's.

It is anticipated that notices describing the program will be mailed to all 560 homes. An estimated response of at least 100 homes will be included in this program on a first come first served basis. In addition to the audits, information regarding the District's existing fixture and appliance rebate program will be provided to all residents in these two subdivisions.

According to estimates provided by Clear Water Solutions (CWS) in the District's 2008 Water Conservation Plan, an indoor water audit program is estimated to save five percent of the average annual use per participant (179,000 gal/yr). With 100 participants, the estimated annual savings for this program is 895,000 or (2.7 acre-feet/yr), which represents approximately 0.7 percent of the annual 2008 Water Conservation Goal for reduction in the Residential water use category (10 year annual reduction goal = 415 acre-feet per year). Actual water saving will be evaluated for the participants and depending on the success of this program, the District will continue with CRC's *"Slow the Flow Indoors"* program.

The Indoor Water Audit Program includes the following tasks:

1. Solicit program participation
2. Conduct audits
3. Reporting and measuring success

## TASK 1 – SOLICIT PROGRAM PARTICIPATION

### Purpose

The activities described under this task will include communicating with the residents of Gunbarrel Estates and Brownsville Subdivision regarding the auditing program in order to solicit participation for the program.

### Subtasks

1.1 Develop indoor water audit program promotional materials to be mailed to each customer of the selected subdivision. The materials shall include a deadline for residents to request participation in the indoor audit program.

1.2 Provide a brochure describing the District's rebate programs to each customer of the selected subdivision.

1.3 Update the District's website with information to promote the indoor audit program.

1.4 Compile a list of residents that have requested to participate by the stated deadline or when 100 residents have requested participation.

1.5 Compile the past water use data for participating residents.

### Task Responsibilities

**District**
The District will prepare indoor audit program promotional mailers for each customer of the selected subdivision, update the website with information to promote the indoor audit program, and provide information describing the District's rebate programs. Additionally, the District will compile a list of selected participants.

### Task Deliverables

- The District will produce indoor water audit program promotional mailer for all customers within the selected subdivisions.
- The District will provide a brochure describing the District's rebate programs to all customers within the selected subdivisions.
- The District will complete website updates with information to promote the indoor audit program.
- The District will compile a list of 100 selected participants.
- The District will compile selected participants water use data.

## TASK 2- CONDUCT AUDITS

### Purpose

This task includes conducting the indoor audits for the selected participants.

### Subtasks

2.1 Contract with CRC to have CRC perform indoor audits through their *"Slow the Flow Indoors"* program.

2.2 Assemble a participation packet for selected participants with information from CRC regarding the audit and District rebate program information.

2.3 Purchase faucet aerators and showerheads for retrofit during on-site audit.

2.4 Contact selected resident to schedule the on-site audit.

2.5 Perform the on-site indoor audit. The on-site audit will include:

- Provide selected participant with a participation packet.
- One-on-one consultation to analyze indoor water use including a review of past water use information.
- Testing to determine if any fixtures are leaking water.
- A customized document provided to the resident summarizing the following:
  - A breakdown of where water is used indoors.
  - Information on which appliances use the most water.
  - A cost-benefit analysis for switching to water efficient fixtures.
  - Recommendations and tips to encourage residents to be more water efficient.
  - Resources for saving water.
- Retrofit of showerheads and faucet aerators.

2.6 Meeting between the District and CRC to discuss the participant's results.

### Task Responsibilities

**CRC**
CRC will contact the selected participants to schedule the on-site audits, provide the participant with the participation packet, perform the indoor audits, install retrofit devices and compile the results into a "*Slow the Flow Indoors*" summary document provided to the participant during the on-site audit.

**District**
The District will assemble the participation packets and provide as-needed support to CRC to assist in completion of the indoor water audits.

## Task Deliverables

- The District will contract with CRC to perform indoor audits through their *"Slow the Flow Indoors"* program.
- The District and CRC will provide information packets for selected participants.
- CRC will perform indoor water audits and provide participants with a customized *"Slow the Flow Indoors"* summary document detailing the indoor audit results.
- CRC will install faucet aerators and showerheads.

## TASK 3 – REPORTING AND MEASURING SUCCESS

### Purpose

This task includes following up with the selected participants on the water savings recommendations implemented and if any rebates were obtained. This task also includes compilation and review of all data collected, preparation of required reports, and presentation of program results.

### Subtasks

3.1 Produce a follow-up survey for the participants to determine what water savings recommendations were implemented and if rebates were obtained. The follow-up survey will be mailed to all of the selected participants approximately two to three months following the completion of the *"Slow the Flow Indoors"* on-site audit.

3.2 CRC will provide a report containing data collected during the on-site audit.

3.3 Compile water use data for a period of two years prior and 12 months after the indoor audits are conducted.

3.4 Conduct data analysis regarding pre- and post-water use for indoor audit participants, analyze results from the follow-up survey, analyze cost of water savings and cost-benefit for additional savings. A water savings model will be developed within this subtask.

3.5 Prepare and complete 50 percent progress report per CWCB requirements including discussion of project status, project success and obstacles, and potential budget and schedule impacts.

3.6 Prepare and complete 75 percent progress report per CWCB requirements including discussion of project status, project success and obstacles, and potential budget and schedule impacts

3.7 Prepare final indoor water audit report for CWCB. The report will include a review of the activities completed, an estimate of actual water savings realized, and other relevant information.

3.8 District Board meeting presentation.

## Task Responsibilities

**CRC**
CRC will provide the District with a summary report containing data collected during the on-site audit. This report is provided by December of the year in which the on-site audit was performed.

**District**
The District will produce and distribute a follow-up survey for the participants in the indoor water audit program and will collect and analyze the results of said survey. Additionally the District will compile and analyze the data necessary to complete an estimate of actual water savings realized. Finally, the District will prepare and submit 50 and 75 percent progress reports to CWCB. A final indoor water audit program report will be completed, presented to the District Board and submitted to CWCB.

## Task Deliverables

- The District will issue a follow up survey for indoor water audit participants and compile results.
- CRC will provide an indoor audit summary report to the District by December of the year in which the on-site audit was performed.
- The District will complete the 50 percent and 75 percent progress reports required by CWCB.
- The District will complete a final indoor water audit program report.
- The District staff will complete a final presentation to the District Board.

## APPENDIX C - DESCRIPTION OF IMPROVED LEAK DETECTION & REPAIR PROGRAM

The District desires to improve their current leak detection and repair program with the proposed Improved Leak Detection & Repair (ILDR) Program. Through the IDLR Program, the District will hire a contractor to detect leaks in selected subdivisions with known leaks and aging infrastructure. Aging Infrastructure will be repaired or replaced.

The 2008 Water Conservation Plan included an Improved Leak Detection & Repair Program. The District is proposing to survey 100 percent of the waterlines, hydrants and service taps in ten existing subdivisions representing 25.8 miles of distribution mains, 102 hydrant laterals and 1,344 service connections. The included subdivisions were selected based on the age of the systems (25-40 years) and the frequency of known leaks.

Mike Parish, owner of American Leak Detection (ALD), will perform the survey. The District will follow up on the leak detection reporting and perform the repairs necessary to fix the identified leaks. Based on estimates from ALD for other municipal systems along the Front Range, it is assumed that there will be 15 leaks per 100 miles at five gallons per minute (gpm) and one out of every five hydrants at 1.5 gpm. This would equate to a potential savings of 81 acre-feet per year, which represents approximately 36 percent of the annual 2008 Water Conservation Goal for reduction in Un-accounted for Losses (ten-year annual reduction goal = 222 acre-feet per year).

The leak detection survey will take approximately ten days to complete at $1,000 per day. This estimate is based on the length and type of distribution mains and the number of service connections and hydrants. Depending on the success of this program, the District will continue with annual leak detection and repair of the entire system on a rotating basis.

One of the participating subdivisions, River Valley Village, has committed to repairing leaks detected through this program. A letter of commitment from River Valley Village's Community Manager is found at the end of Appendix C.

The Improved Leak Detection & Repair Program includes the following tasks:

1. Leak Detection by American Leak Detection
2. Reporting and measuring success

### TASK 1 – LEAK DETECTION BY AMERICAN LEAK DETECTION

#### Purpose

This task includes conducting the leak detection survey for the selected subdivisions.

## Subtasks

1.1 Contract with ALD to perform services.

1.2 Pre-survey meeting and coordination with ALD.

1.3 Provide ALD with pertinent information regarding the selected subdivisions, including:

- Detailed infrastructure mapping
- Field locates

1.4 Conduct the leak detection survey.

1.5 Compile and manage leak detection survey results.

## Task Responsibilities

**District**
The District will contract with ALD for leak detection services and coordinate pre-survey meeting. Additionally, the District will provide detailed mapping, field locates, personnel to assist in leak detection survey, and any additional information or assistance as requested by ALD.

**ALD**
ALD will coordinate with the District to obtain a contract for leak detection services and attend a pre-survey meeting. Additionally, ALD will work with the District to conduct the leak detection survey and provide the results of said survey to the District.

## Task Deliverables

- The District will provide ALD with information and assistance necessary to complete the leak detection survey.
- ALD will perform the leak detection survey and provide the District with the leak detection survey results.

## TASK 2- REPORTING & MEASURING SUCCESS

## Purpose

The purpose of this task is to report the leaks that were found and repaired and compute the associated water savings following the repairs.

## Subtasks

2.1 Analyze un-accounted for losses to determine water savings evident from the improved leak detection and repair program.

2.2 Prepare and complete 50 percent progress report per CWCB requirements including discussion of project status, project success and obstacles, and potential budget and schedule impacts.

2.3 Prepare and complete 75 percent progress report per CWCB requirements including discussion of project status, project success and obstacles, and potential budget and schedule impacts.

2.4 Prepare final improved leak detection and repair program report for CWCB. The report will include a review of the activities completed, an estimate of actual water savings realized, and other relevant information.

2.5 District Board meeting presentation.

## Task Responsibilities

### District

The District will repair leaks (the District will not be responsible to repair River Valley Village's identified leaks), analyze the ongoing 12-month running average loss report to determine the percentage reduction in un-accounted for losses and prepare and submit 50 and 75 percent progress reports to CWCB. A final program report will be completed, presented to the District Board and submitted to CWCB.

## Task Deliverables

- The District will repair leaks within time and budgeting allowance.
- The District will complete the 50 percent and 75 percent progress reports required by CWCB.
- The District will complete a final Improved Leak Detection and Repair Program report.
- The District staff will complete a final presentation to the District Board.

# River Valley Village

**Manufactured Home Community**
10910 Turner Blvd.
Longmont, Co. 80504
303-772-3240
Fax 303- 772-2447


Left Hand Water
P.O. Box 210
Niwot, Co 80544
Attn: Christopher Smith
chrissmith@lefthandwater.org

Dear Sir,

As per our phone conversation on December 22, 2010, this letter is our request to be included in your Leak Detection Program funded by conservation grant money. When problem areas have been identified we will commit to repairing the leaks within a maximum of a 60 day period, or as agreed before initializing the detection process.

Please contact me at your earliest convenience so we can identify the next steps necessary to begin the process.

I look forward to speaking to you again in the near future.

Best Regards,

Mark Fulkerson
Community Manager
River Valley Village
Cell: 303-335-6232