

1 accompanying tariffs (attached as Exhibit 1) detail each BMP the Company seeks to implement.

2 CWCGV management has evaluated the burden imposed on its customers to further reduce
3 their ground water use and provide lasting long-term benefit to the Santa Cruz aquifer. CWCGV
4 management has chosen to focus on reductions in outside water use and system improvements that
5 have economic benefit to its customers. CWCGV reiterates here that its water use is comparatively
6 small compared to the other users within the Santa Cruz River aquifer that is the source for the
7 Company's water. In fact, CWCGV's customers' water use in 2010 is estimated at about 2,700
8 acre feet, and is among the lowest per-capita consumption within the Tucson Active Management
9 Area. Even so, the recommended BMPs the Company proposes for Commission consideration are
10 designed to further reduce groundwater consumption.

11 Notably, if 100% of CWCGV's customers reduced 10% of their historical water use, there
12 is a further savings potential of 270 acre feet per year. Since the total overdraft in the Upper Santa
13 Cruz River aquifer is approximately 34,735 acre-feet (as the Upper Santa Cruz Providers and Users
14 Group (USCPUG) reported) this savings potential is equivalent to approximately 0.78% of the total
15 overdraft. The fact remains that it will take efforts from all the entities using the aquifer to reduce
16 the overdraft. Nevertheless, CWCGV believes its proposed programs will help it encourage
17 customers towards this goal in a positive way.

18 In addition, CWCGV's unaccounted-for water is approximately 7%. If 100% of that was
19 attributable to leaks, then there would be a potential savings of approximately 200 acre feet of
20 water per year (equivalent to 0.58% of the total Upper Santa Cruz Aquifer overdraft). This is
21 assuming that CWCGV could identify and repair all leaks on its system. Therefore, CWCGV
22 proposes a comprehensive leak detection program to identify and repair leaks on its system.

23 Moreover, the Company will coordinate this program with its plan to evaluate and deploy
24 new and emerging technologies and practices to improve the detection and repair of leaks.
25 CWCGV proposes to test various leak detection methods in different areas within its service
26 territory. Exhibit 2 details a Best Management Practice Case Study involving Kirtland Air Force
27 Base in Albuquerque, New Mexico. There, the leak detection and prepare program resulted in

1 significant savings in water of over 16%. Exhibit 3 summarizes new technology the Company
2 intends to explore as part of its program – an Advanced Leak Noise Logger. CWCGV proposes to
3 evaluate the best practices and technologies available for its system – factoring in cost
4 effectiveness and results. Thus, CWCGV’s leak detection program and its program to evaluate
5 new and emerging technologies are a coordinated effort using two BMPs to further reduce water
6 loss and preserve groundwater.

7 **II. SURCHARGE REQUEST.**

8 CWCGV needs to cover additional costs for a leak detection program not factored into
9 existing rates approved in Commission Decision No. 71478. That decision also allows the
10 Company to seek cost recovery of actual costs associated with the BMPs implemented.
11 Consequently, in order to fully implement its proposed leak detection program and move
12 expeditiously toward implementing the best practices and technologies to identify and repair leaks,
13 the Company proposes a \$1.00 per-month per-customer “conservation” surcharge.

14 To implement this program, the Company will immediately begin to incur expenses for
15 detecting, locating and repairing leaks. The total cost of detecting and repairing leaks will depend
16 on the number and nature of leaks discovered. This includes the costs to conduct of survey on its
17 system (that further depends on the methods used to conduct the survey). Part of CWCGV’s
18 approach is to determine what methods will be most efficient to detect leaks. CWCGV is
19 requesting recovery of the total costs for the program – including direct labor and material costs
20 and overhead for the program through its proposed surcharge.

21 **III. CONCLUSION.**

22 The Company, for over three decades, has demonstrated its commitment to helping its
23 customers conserve. Indeed, the Company has already implemented conservation measures that fit
24 into many of the BMP categories (including new homeowner landscape information and
25 developing industry partnerships). CWCGV’s Board of Directors and its management are
26 committed to actively participating in further efforts to encourage conservation. These proposed
27 BMPs are designed to continue and further ongoing Company efforts towards achieving further

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1 conservation of water. As part of those efforts (particularly for its proposal to implement a leak
2 detection and repair program), the Company requests approval of its proposed \$1.00
3 “conservation” surcharge.

4 RESPECTFULLY SUBMITTED this 2nd day of June, 2010.

5
6
7 By _____

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21
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Exhibit

“1”

Adult Education and Training Programs – BMP 2.1

Purpose

The purpose is to help users better understand how to conserve water through written and hands-on training in water conservation tools and techniques.

(Modified Non-Per Capita Conservation Program BMP Category 2: Conservation and Education)

Requirements

CWCGV will continue to sponsor and implement adult education and training programs. The programs will include a combination of efforts to provide adults within CWCGV's service area hands-on training. This includes regularly scheduled workshops for homeowners, a speaker's bureau, and training programs for landscape professionals. The program is targeted toward homeowners and landscape professionals.

The requirements of this tariff sheet are governed by the Rules of the Arizona Corporation Commission and were adapted from the Arizona Department of Water Resources as stated in its Required Public Education Program and Best Management Practices in the Modified Non-Per Capita Conservation Program.

Issued: [DATE]

Effective: [DATE]

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Green Valley, AZ 85614

New Homeowner Landscape Information – BMP 2.3

Purpose

The purpose is to make low water use landscape information packets available to all new owners of newly constructed homes and to new owners of existing homes (resale) through standardized welcome kits.

(Modified Non-Per Capita Conservation Program BMP Category 2: Conservation and Education)

Requirements

CWCGV will continue to provide low water use landscape information through welcome kits to 100% of customers who request them. CWCGV will record the number of these welcome kits provided to customers and provide reports when requested.

The requirements of this tariff sheet are governed by the Rules of the Arizona Corporation Commission and were adapted from the Arizona Department of Water Resources as stated in its Required Public Education Program and Best Management Practices in the Modified Non-Per Capita Conservation Program.

Issued: [DATE]

Effective: [DATE]

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Leak Detection Program and Surcharge – BMP 4.1

Purpose

This program is to ensure that the water system is running at optimal efficiency (maintenance) and to improve water use efficiency in the physical water system by making one or more physical system improvements.

(Modified Non-Per Capita Conservation Program BMP Category 4: Physical System Evaluation and Improvement)

Requirements

CWCGV will implement a systematic evaluation of its water distribution system to identify and fix leaks. CWCGV will implement the program throughout its service area and focus on those portions of the service area likely to yield the highest potential for water savings.

- Bids will be taken for a thorough evaluation of potential leaks in the system
- Recommendations for improvements and acquisition of specialty tools will be evaluated.

CWCGV will employ the use of new and emerging technologies and practices to detect and repair leaks.

The requirements of this tariff sheet are governed by the Rules of the Arizona Corporation Commission and were adapted from the Arizona Department of Water Resources as stated in its Required Public Education Program and Best Management Practices in the Modified Non-Per Capita Conservation Program.

Issued: [DATE]

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Leak Detection Program and Surcharge – BMP 4.1 (Continued)

Conservation Surcharge

Applicability – Applicable to all Community Water Company of Green Valley Customers throughout its service territory.

Rate – A \$1.00 surcharge per month per customer to commence [DATE].

Conditions

1. The Conservation Surcharge will be exclusively used toward identification and repair of leaks on an expedited basis.
2. CWCGV will use the surcharge in part to use and deploy emerging technologies to meet the goal of identifying and repairing leaks.

Issued: [DATE]

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Evaluate New and Emerging Technologies and Practices – BMP 7.3

Purpose

As part of its program to identify and repair leaks on an expedited basis, the purpose of this program is to employ new and emerging technologies and practices to detect and repair leaks more efficiently and thoroughly. This includes CWCGV's intent to explore the feasibility of implementing new practices including that used by Kirtland Air Force Base to detect and repair leaks – and the use of new technologies including the use of advanced leak noise loggers.

(Modified Non-Per Capita Conservation Program BMP Category 7: Research/Innovation Program).

Requirements

CWCGV will evaluate new practices and technologies used toward detecting and repairing leaks. CWCGV will document the objectives of the evaluation, methods used to conduct the evaluation and results of the investigation. Any documentation will be made available for public distribution.

The requirements of this tariff sheet are governed by the Rules of the Arizona Corporation Commission and were adapted from the Arizona Department of Water Resources as stated in its Required Public Education Program and Best Management Practices in the Modified Non-Per Capita Conservation Program.

Issued: [DATE]

Effective: [DATE]

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Development of Industry Partnerships – BMP 7.6

Purpose

The purpose is to encourage and implement a collaborative effort and focus the activities on a variety of activities designed to save water.

(Modified Non-Per Capita Conservation Program BMP Category 7: Research/Innovation Program).

Requirements

CWCGV will continue to contract and fund its membership in the Southern Arizona Water Conservation Alliance of Southern Arizona (WaterCASA). WaterCASA is a partnership of other water utilities, whose objectives and ongoing efforts and planning for the future are reported on their web page <http://www.watercasa.org>. CWCGV is a founding member of WaterCASA.

The requirements of this tariff sheet are governed by the Rules of the Arizona Corporation Commission and were adapted from the Arizona Department of Water Resources as stated in its Required Public Education Program and Best Management Practices in the Modified Non-Per Capita Conservation Program.

Issued: [DATE]

Effective: [DATE]

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Exhibit

"2"

Best Management Practice
Case Study #3

Distribution System Audits, Leak Detection, and Repair

Kirtland Air Force Base – Leak Detection and Repair Program

Overview

Kirtland Air Force Base (AFB) performed an award winning leak detection and repair program in 2006. The results of the project are saving Kirtland AFB 179 million gallons each year, which is over 16% of the total water use at the base. Kirtland AFB is located on 52,000 acres, southeast and adjacent to Albuquerque, New Mexico. The area is a high altitude desert, only receiving about 8 inches of rain each year. Kirtland AFB draws water from an underground aquifer via seven production wells throughout the base. The base also has access to water from the City of Albuquerque. The underground water supply is declining, which has spurred Kirtland AFB to develop a water conservation program, including the leak detection and repair program featured in this case study.



Figure 1: Photo of the largest leak found during the survey (joint offset) with a water loss rate of 180 gallons per minute

Project Summary

Two leak detection approaches were considered by Kirtland AFB prior to commencing the project – passive survey and active survey. These two methods are described below:

1) Passive Survey:

- Method: Listening devices are installed on water lines at ¼ mile spacing to record the acoustic signatures that are used to identify leaks; if leaks are identified, additional equipment is required to find the specific leak locations.

- Best Application: Passive surveys are best suited for a permanent installation and long term monitoring of water lines

- Benefits: Accurate leak location and size determination; good option for long-term monitoring of water lines

- Disadvantage: The survey equipment can only “hear” one leak at any given point in time; installation can be time consuming over long water lines

2) Active Survey:

- Method: Leak detection crews use acoustic listening devices, while walking each water line to find leaks

- Best Application: Active surveys are best suited for a large network of water lines in areas where multiple leaks are suspected

- Benefits: Active surveys allow for a relatively rapid survey of extensive water lines and provide exact leak locations as the survey progresses

- Disadvantage: This method gives a one-time snapshot of system leaks; this does not provide on-going leak detection options.

After considering these two methods, Kirtland AFB decided that the active survey was most appropriate for their situation. Kirtland’s goal was to pinpoint leaks quickly, estimate the size and volume of leaks, and develop a prioritization for repairs. An active survey met these goals best. In addition to the quick location and repair, the site also wanted to be able to track the costs associated with location and repair so that a cost-per-gallon-saved metric could be developed. The active survey method allowed Kirtland AFB to track costs in this way because as the leaks were found, they were repaired. Kirtland AFB contracted the work through the Air Force Civil Engineer Support Agency (AFCESA). This allowed a quick avenue to access experienced leak detection

Kirtland AFB team won the Federal Energy and Water Management Water Conservation Award for Local Group.





Figure 2: Photo of a secondary leak found during the survey, which was leaking water at a rate of 30 gallons per minute.

and repair contractors, which were pre-qualified through AFCESA.

In total, 108 miles of water distribution lines were investigated in the survey; this represents about 90% of the water distribution lines on the base. Through the survey, site staff determined that nearly 16% of the base's water use was lost through the water distribution system leakage. A total of 31 leaks were identified with an estimated water loss of 333 gallons per minute. The site found that major leaks were primarily caused by offset joints (i.e., joints that are misaligned), while smaller leaks were caused by corrosion of the pipe material.

The largest leak that was found was in a 30 inch supply line in a remote, undetected area of the base, which flowed at about 150 gallons per minute at the time of discovery. This leak was caused by an offset joint and is shown in Figure 1. A smaller leak identified and estimated at 30 gallons per minute is shown in Figure 2. All repairs took place in a three-month window, with the largest leaks repaired first.

Cost and Savings Summary

The cost of the leak detection survey was approximately \$75,000 (or roughly \$695 per mile) and the repairs cost an additional \$514,000. The survey and repairs saved the site over 179 million gallons annually, representing over 16% of the base's total water use. This savings, valued at more than \$350,000 annually at a water rate of \$1.88/kgal, provided a 1.75 year payback.

Including the survey and repairs, the project cost Kirtland AFB \$3 per thousand gallons of water saved. In other words, for every thousand gallons of water Kirtland was losing, it will roughly cost only \$3 to repair the leaks.

As a result of this project, the Kirtland AFB team won the 2007 Federal Energy and Water Management, Water Conservation Award to Small Groups. The Kirtland AFB team, proudly holding their awards, is shown in Figure 3.



Figure 3: Award recipients of the Federal Energy and Water Management, Water Conservation Award to Small Groups (from left to right): Lawrence "Stu" Karbowiak, Clifford "CH" Richardson, William "Yells" Jones, Patrick "Pat" Morrere, and Mark Plumley.

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to Energy

It is the policy of the United States Government to encourage the use of energy-efficient products and services.

DOE-0003
 January 2008

Exhibit

“3”

Permalog+

Advanced Leak Noise Logger

ENVIRONMENTAL
PRESSURE CONTROL
LEAK DETECTION
DATA LOGGING



KEY BENEFITS

- Flexible deployment options – permanent, semi-permanent or survey (as required by area)
- Responds rapidly to new mains bursts, improving service to customers
- Automates leak surveying, eliminating human error and finding leaks that would otherwise be missed
- Completely non-invasive method with no detrimental effects on supply to consumers
- Loggers can be quickly deployed and used repeatedly with no disruption to the surrounding area.
- Low cost battery replacement and rugged construction enable long term low leakage levels to be maintained easily with minimum maintenance.
- Three year standard warranty.

Permalog® enables water suppliers to quickly and efficiently locate leaks in the water network. Loggers are deployed in areas of the distribution system to provide continuous monitoring of leakage. Easily installed on pipe fittings, they are retained in place by a strong magnet and are powered by low cost replaceable batteries. As soon as a potential leak is detected, the Permalog® unit enters an alarm state and transmits a radio signal to indicate a "LEAK" condition.

The effectiveness of Permalog® technology has been proven again and again in some of the harshest conditions on earth. Loggers are immersion-tested to IP68 and will continue to operate even in flooded chambers. Water suppliers can monitor 100% of their distribution system confidently and effectively, enabling leakage to be reduced quickly, and easily maintained at a low level.

The new Permalog+ includes Aqualog extended logging functionality, where noise is recorded at preset intervals over an extended period of time. The logger can store up to twenty-nine days of level and spread history and the noise trends identified can then be presented in graph format, enabling the user to distinguish clearly between leak and non leak noise. The highly versatile logger has user changeable plastic/metallic alarm threshold settings and allows data to be accessed via:

- **Lift and Shift** – loggers are removed from the ground and the data is manually retrieved
- **Patroller "Drive By"** - data is transmitted via radio to a moving patrol vehicle using a Patroller system
- **PermaNet** – data is transmitted directly to an office computer via radio network or SMS repeater.



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Permalog+

Advanced Leak Noise Logger

ENVIRONMENTAL MONITORING
PRESSURE CONTROL
LEAK DETECTION
DATA LOGGING

Specification	Permalog +
Dimensions (with aerial)	Market Dependant: Varying Sizes for Aerial Used
Dimensions (without aerial)	Height to Top of TNC:
Angle fittings available	123mm, width: 50mm width
Weight	700 grams
Type of Battery	Lithium/replaceable
Battery Life	Typically 5 years depending on mode of operation
IP Rating	IP68
Parameters	User Programmable



Full specifications provided on request to Halma Water Management

HWM reserve the right to change the specification of any product without prior notice.

Lift and Shift Data Collection

The Permalog+ "lift and shift" mode is designed for use in a rapid deployment mode allowing users to distribute loggers into the distribution systems, quickly identify potential areas of leakage and then re-deploy the loggers into another area.

Drive By (Patroller II) Data Collection

Permalog+ has an improved surveying speed enabling fast radio download of new data, including full noise logging Aqualog graphics where further investigation is required. The drive by version features a new PDA based blue-tooth Patroller (Patroller II) to enable remote multiple logger programming and download.

PermaNet (Radio or SMS Repeater) Collection

As part of a fixed network Permalog+ can be combined with PermaNet network radio, or SMS repeater, to send leak data daily to the office via dedicated web hosted or local software packages. This gives a powerful system for immediate leakage notification and localisation, leak sizing when combined with daily flow data, for the cost effective management of areas with high levels of leakage, or access/security issues.

For more information, please view the appropriate HWM Data Sheets



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