APPENDIX E

Water Loss Action Plan

2014 WATER LOSS CONTROL ACTION PLAN
FOR
VADER-ENCHANTED VALLEY WATER SYSTEM (WSDOH #90900)

INTRODUCTION

Lewis County began managing the Vader-Enchanted Valley Water System on January 1, 2011 upon receivership of the water system. Although transfer of the ownership of the system has not been reached between the City of Vader (City) and Lewis County at the time of writing this plan, Lewis County has been actively working toward controlling distribution system leakage. The goal of the water loss action plan (WLAP) for the system is to be at 20% or less by the end of the planning period which is 2020. This goal is established as a requirement of the Water Use Efficiency Rule.

SUMMARY

A summary of the water volumes produced, accounted usages and unaccounted usages (losses) is provided. Care should be used when reviewing these numbers because of the unknown method used by the City for the derivation of the accounted usage volumes and other variables. Another unknown is the duration of the year. We use a billing year which is from December through November. However, the data shows increasing non-revenue losses from 2000. We know there were about 16 main breaks from 2006 to 2010 of which about 9 breaks occurred in 2010. This may explain the high non-revenue loss in 2010 along with the fact we started reporting in 2010 with limited information of authorized water uses by the City for 2010.

TABLE OF WATER USE EFFICIENCY DATA

YEAR	METERED PRODUCED WATER	AUTHORIZED REVENUE WATER	AUTHORIZED NON-REVENUE WATER	NON-REVENUE LOSS	
	(gallons)	(gallons)	(gallons)	(gallons)	(%)
2000*	30,749,060	20,468,470		10,280,590	33.4
2005*	35,897,750	22,473,415		13,424,335	37.4
2008*					40.8
2009*	40,615,550	23,548,795		17,066,755	42.0
2010*	39,401,200	15,691,595		23,709,605	60.2
2011	31,194,300	14,371,469	780,000	16,042,831	51.4
2012	30,510,700	15,097,432	86,420	15,183,852	50.2
2013	29,288,600	14,680,005	2,145,557	12,463,038	42.6
2014	26,418,900	16,042,744	5,296,655	5,079,501	19.2

*City of Vader management and data.

Some noteworthy events to consider in the tabulation of water use efficiency (WUE) data are:

- The City purchased the Enchanted Valley water system (EVCC) in June 2009. The City had billed EVCC for water usage based on a master meter. It is unknown when the City began to bill individual EVCC users but we suspect in Dec 2009 meter reads.
- The City may have used calendar year and halved the bi-monthly meter reads for January and December.
- 2005 and 2008 figures were compiled from the May 2008 Water System Plan for the City of Vader.
- 2009 figures were taken from the annual WUE report submitted by the City. No explanation about the accounted usage volume.
- The City installed the "meter to record volumes sent to the system in 2008. This is based on the meter tags that noted a meter testing date of October 31, 2008. Prior to installation of the meter, the produced volume was based on volume sent to clearwell-tank with adjustments for plant operation volumes.
- The City did not meter water usage for their fire station, wastewater treatment plant, parks and other city facilities. It is unknown how and if these volumes were considered for accounted usage.
- The City operated the system from November to December 2010 under the management supervision of Lewis County.

Overlooking the uncertainties of the data up to 2010, there is a trend of decreasing volumes of produced water. Less finished water is sent to the system after repairs of mains, service lines and hydrants. Lewis County undertook an extensive water main replacement project complete with new service lines and meters which was completed in December 2012. Service meters will be replaced throughout the system by mid-2015 so that effort will hopefully lower the non-revenue losses.

METHODS

Lewis County Utility staff has outlined the following activities to determine real and apparent losses. The Utility staff is comprised of engineering, operations and fiscal personnel.

1. Accounting and Billing.
   - ☑ Lewis County will evaluate the City's inactive account list with the bimonthly meter read reports, notify non-paying city customers with locked meters about current utility fees, promptly address delinquent accounts, and continue ongoing coordination with engineering and operations to maintain an active account list (aka Master Meter List).
   - ☑ Service meters have been installed at city facilities.

2. Enforce Active Account List.
   - ☑ Lewis County will promptly address delinquent accounts, remove meters, take bimonthly readings of accounts with locked meters, locate hidden meters, update

Utility's meter map book, update Utility's system database, and take measures to identify and enforce unaccounted usages.

3. Plant Production Meter.
   - ☑ Lewis County will calibrate the water-sent-to-system meter at the Plant in 2013.

4. Meter Replacement Program.
   - ☑ The system uses different types of customer meters. Verification was made in June 2013 comparing readings from different types of meters with readings in the last meter read reports. No issues were found.
   - ☑ Lewis County will implement an annual program to ultimately replace all customer water service meters with meters using gallons.

5. Leak Detection Program.
   - ☑ Lewis County contracted American Leak Detection Services in 2011 for system leak detection. All problem areas were addressed and completed in August 2013.
   - ☑ Lewis County will continue to find and repair leaks throughout the system. Leak detection efforts will be on the mains in Enchanted Valley and on the 10" main from the Plan to town.

6. Fire Hydrant Use.
   - ☑ Lewis County will continue to work with the Cowlitz-Lewis County Fire District #20 to report volumes used at Utility fire hydrants for fire-fighting and tanker refills. A 2" service meter and standpipe have been constructed in 2012 at their fire station site.

7. Water Sales.
   - ☑ Lewis County has one hydrant locked and designated for contractor customers and for filling county tankers. Lewis County purchased a flow meter to measure the volume of water sold to contractors.

8. Maintenance Use.
   - ☑ Operations staff will note volumes used for hydrant exercises, leaks and repairs.