

# **Walker Lake Water District Water Conservation Plan**

**December 2007**



**Prepared for:**

**Walker Lake General Improvement District  
175 Wassuk Way  
Walker Lake NV, 89415**

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## **INTRODUCTION**

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The Walker Lake General Improvement District provides water service to the Town of Walker Lake, which is located approximately twelve miles north of Hawthorne on U.S. Highway 95. The community is located between the east slope of the Wassuk Range and the southwest shoreline of Walker Lake in Mineral County, Nevada. Cottonwood Canyon, a prominent feature of the Wassuk Range is located directly west of the service area. US Highway 95 bisects the Town of Walker Lake.

This conservation plan has been created with the above mentioned in mind, and includes the following:

- Conservation Goals
- Existing and planned conservation measures and incentives
- Walker Lake Water District use profile
- Educational Materials

This plan is compliant with Nevada Revised Statutes (NRS) Sections 540.121 through 540.151 and is available for public inspection during office hours at the following location:

**Walker Lake General Improvement District  
175 Wassuk Way  
Walker Lake NV, 89415  
(775) 945-2007**

Public Comments about this plan are encouraged. Written comments may be sent to the address above.

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## SECTION 1 – CONSERVATION GOALS

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The following goals have been selected to help Walker Lake become a conservation conscious community. As the residents become more conservation minded and adopt conservation practices, these goals can be increased in scope, and new ones can be added through periodic revision of the Conservation Plan.

### **1.1 Establishment of a Conservation Budget**

Walker Lake Water District currently has a Water Conservation Plan that consists mainly of regulatory measures, and for more proactive measures to be implemented, money must be budgeted for conservation purposes.

### **1.2 Creation of a Conservation Education Program**

The creation of an education program can be done in stages. The first stage will be to distribute educational materials (see Section 3). Conservation materials may be made available at the water system office. The next stage may be periodic visits to local schools. After evaluating the success of these initial stages the program can be fine tuned in order to maximize efforts and expense.

### **1.3 Drafting and Implementation of a Landscape Code**

Water usage is much higher in the summer than the winter due to landscape's watering needs. For this reason, a landscaping code is a fundamental part of an effective water conservation plan. A landscape code will regulate both new landscapes and the replacement of existing landscapes. The intent of the code is not to limit landscape options, but to help customers optimize the efficiency of landscape water use.

### **1.4 Conservation Plan Review and Metrics**

This plan will be reviewed and revised every five (5) years. Plan adoption and revision will conform to NRS 540.131 (2) and (4). Per these sections any interested person shall have the opportunity, "including, but not limited to, any private or public entity that supplies water for municipal, industrial or domestic purposes, to submit written views and recommendations in the plan." Every revision will be made available for inspection by these persons or entities.

The success of plan incentives and measures will be determined through an annual review of production and usage. Comparison of past gallons per capita per day (gpcd) use with present use will show if incentives and measures are effective on a per person basis. Also a past and present production to usage comparison will indicate if there has been a reduction in unaccounted-for water.

### **1.5 Conservation Plan Implementation Schedule**

The conservation measures and incentives in this plan will be implemented according to the following schedule:

**Table 1.1**  
**Plan Implementation Schedule**

	2008	2009	2010
<b><i>Incentives</i></b>			
Conservation Education	Implement		
Creation of a Landscape Code		Implement	
<b><i>Measures</i></b>			
Creation of Conservation Budget	Implement		

The annual production audit will help determine if the schedule needs to be adjusted to accommodate the implementation of new measures or incentives or the discontinuation of old ones.

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## SECTION 2 – WATER USE PROFILE AND FORECAST

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This section details the production and usage rates of the Walker Lake Water District, including:

- Water Rights
- Existing Supply Sources
- Water use profile
- Water use forecast using projected population growth

### 2.1 Water Rights

Table 2.1 is a summary of the current water rights permits and certificates held by the Walker Lake Water District. Walker Lake currently holds four active water right permits for underground water.

*Table 2.1*  
**Walker Lake Water District Water Rights Permits**

Permit Number	Date Filed	Point of Diversion	Annual Diversion Rate (Acre-Feet)
26639	3/30/1972	T09N R29E S16	1872.52
26714	5/11/1972	T09N R29E S16	
53023	3/15/1989	T09N R29E S17	3.5
53024	3/15/1989	T09N R29E S18	

Walker Lake has an annual usage limit of 611.3 million gallons.

### 2.2 Supply Sources and Production

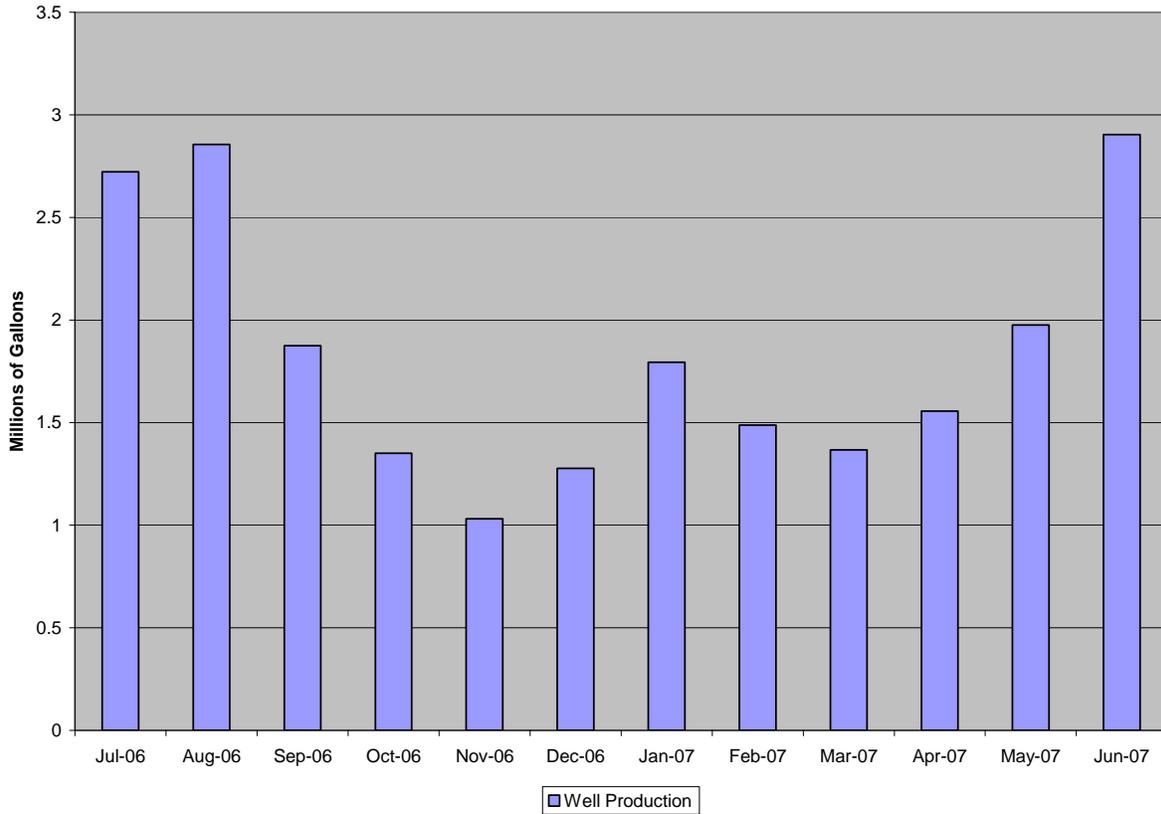
#### Production

Walker Lake has two production wells, which can produce 250 gpm. Monthly records of groundwater usage are kept and additional entries are recorded when the operator visits the well site. Both wells are capable of producing in excess of one million gallons per month. Figure 2.1 details the well production from July 2006 to June 2007. This period is used because it is the fiscal year for the Walker Lake GID.

#### Storage

Walker Lake has 225,000 gallons of storage capacity with one 225,000 gallon storage tank located on Wassuk Way near the mouth of Cottonwood Canyon which was constructed in 1997 during a water system rehabilitation project.

**Figure 2.1: Well Production:**



**2.3 Estimated Amount of Water Conserved Due to Measures and Incentives**

Table 2.7 (See Appendix I) shows the range of residential use per person per day using the U.S. Census 2006 average persons per household estimate (2.5) for Mineral County.

**Table 2.2**  
Range of Residential Water Use in Gallons per Day (EPA Estimates)

Use	Per Person (Low)	Per Person (High)
Toilets	6.4	48.00
Showers	7.50	75.00
Baths	6.00	10.00
Washing Machine	9.00	25.00
Dish Washer	1.00	4.50
Kitchen Faucet	1.00	15.00
Bathroom Faucet	1.00	9.00
Landscape	12.2	182.2
<b>Total</b>	<b>44.1</b>	<b>368.7</b>

Currently the average per person per day use in the Walker Lake service area is approximately 143 gallons which is lower than the State average (200 gpcd). The application of residential conservation measures and incentives encouraged through education (see Section 3.2) could reduce this average. The per person usage range shown in Table 2.2 provides conservation benchmarks for residential water use. An estimated conservation-initiated reduction of 23 gpcd

(down to 120 gpcd) would place Walker Lake residential water use well below the State average. Table 2.3 shows a range of potential averages based on different customer participation levels.

**TABLE 2.3**  
Residential Conservation Resulting from Education (East and West Valley Systems)

% of Users Consuming 120 gallons/day	New gpcd Average (gal)	Amount Conserved Annually (MG)
25	137.25	.72
50	131.50	1.4
75	125.75	2.1

\*Table assumes level population

Table 2.3 assumes a population of 319 within the Walker Lake system. The amounts in Table 2.3 show potential savings due to conservation education. A range is provided because it is difficult to determine the initial level of individual participation in conservation educational conservation programs.

## 2.4 Water Demand Forecast

Information from the Nevada State Demographers office shows Walker Lake having a population of 319 in 2006. The data also indicates there has not been much growth in the area for the last 10-15 years, however, there has been aggressive promotion of the area, and several entities have committed to building new industrial facilities in the nearby community of Hawthorne. Hawthorne is currently limited in its ability to support a large amount of new residents, due to lack of utility infrastructure. Walker Lake has the space and infrastructure to support new residents, therefore it may see significant growth over the next few years.

**3.1 Financial Conservation Incentives**

**3.1.1 Water Rates**

Walker Lake Water District currently uses an inclining block rate structure. This type of rate structure promotes conservation because rates increase with consumption. The following table summarizes Walker Lake’s water rate schedules:

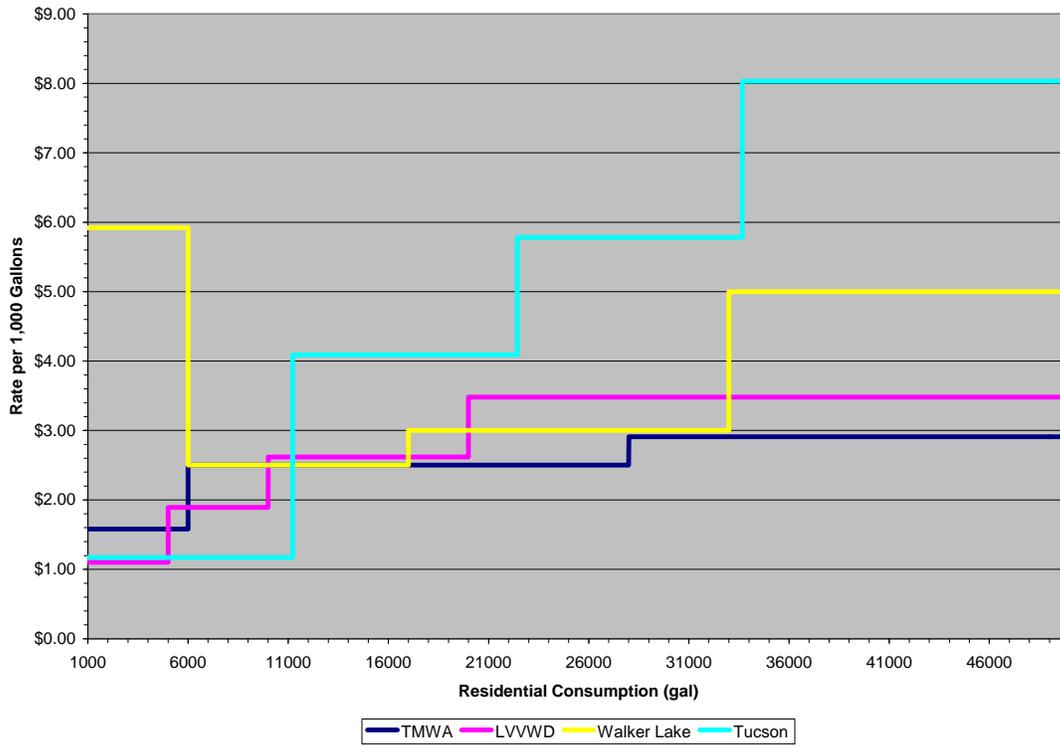
***Table 3.1***  
**Walker Lake Water District Water Rate Schedule**

Billing Tier	Base Rate	Rate for Each 1000 Gallons Used	Gallons of usage included in each billing tier
Base Rate	\$35.40	-	0-5,999
Tier 2	-	\$2.50	6,000-16,999
Tier 3	-	\$3.00	17,000-32,999
Tier 4	-	\$5.00	33,000+

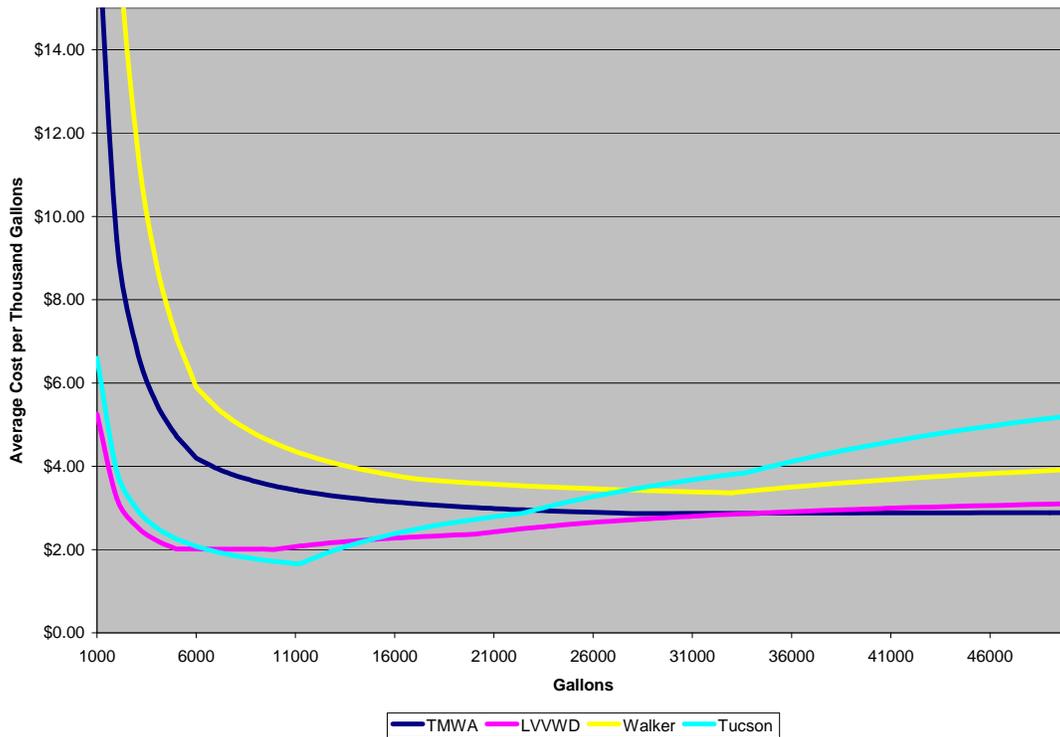
Figure 3.1 shows the marginal price curves for Las Vegas Valley Water District (LVVWD), Truckee Meadows Water Authority (TMWA), Walker Lake and Tucson, Arizona. The curves are shown together to illustrate the different approaches to rate-related conservation. Note that the Tucson curve starts lower than the others but increases substantially in the second tier and remains higher than the others from that point forward. The rate structure for Walker Lake is initially higher than any of the other Nevada systems because the base rate is high. In the middle tiers it is comparable to LVVWD and TMWA but the final tier is substantially higher than both LVVWD and TMWA.

Although the marginal rates in Figure 3.1 show the price of water increasing with use, it is actually the average price per unit that has the greatest impact on conservation. Figure 3.2 shows the average price per thousand gallons for each system. Tucson’s average price per thousand gallons increases sharply at high consumption levels. Although Walker Lake’s average rate does not increase as much as Tucson’s, it does encourage conservation at higher consumption levels. In fact, it should encourage more conservation than the other two Nevada systems shown. Rates used for both figures were taken from the websites of the respective systems.

**Figure 3.1: Marginal Price Curves for Walker Lake, TMWA, LVVWD and Tucson**



**Figure 3.2: Average Price per 1,000 Gallons for Walker, TMWA, LVVWD and Tucson**



## **3.2 Educational Conservation Incentives**

### **3.2.1 Public Hearings**

Public hearings will be held at a regularly scheduled Board of Directors meeting to receive input from water customers and the general public prior to adoption of this Water Conservation Plan.

### **3.2.4 Literature**

The American Water Works Association (AWWA) and the University of Nevada Reno Cooperative Extension Service publish a number of water conservation related pamphlets that can be distributed by the water system. Some of these pamphlets will be selected by the water system to be distributed to customers and made available at the water system office. Appendix G includes summaries of these pamphlets.

## **3.3 Regulatory Conservation Incentives**

### **3.3.1 Landscape Code**

Walker Lake Water District does not currently have a landscape code. Since one of the goals of this plan is to draft such a code, some basic guidelines are included here to be used in the creation of the code.

#### **Purpose**

The purpose of the landscape code can include aesthetic improvement, noise, dust and erosion reduction, as well as water conservation. All of these elements should be considered.

#### **Definitions**

All terms in the plan must be specifically defined and examples should be given. For example, mulch is a commonly used landscaping term, but the list of materials that can be considered mulch is broad. Acceptable materials must be defined to maintain a standard.

#### **Applicability and Exceptions**

The code should clearly specify which projects, existing and/or new it applies to. These projects will include new developments, both commercial/industrial and residential.

#### **Landscape Plan Filing**

This should include items to be included on the project plans that will be submitted for approval. Examples of these items include plant lists, irrigation plans, property lines, existing structures, landscape calculations and so forth.

#### **Specific Standards**

Standards mandated by the code should be clear and concise. These standards will include:

- The percentage of landscaping expected in relation to the overall property plan
- Turf is not recommended

- Number and type of trees and plants
- Irrigation installation

### **Bonding Requirements**

Bonds, cash, cashier's checks or letters of credit may be required to insure that the landscape is installed per the submitted landscape plan.

### **Maintenance**

A section on maintenance should be included to insure the landscapes continue to function as originally planned. Plant health, repair of damage, and penalties for non-compliance should be included.

### **Plant List**

A list of water efficient plants that can thrive in the Walker Lake area has been included in Appendix C.

### **3.3.2 Watering Regulations**

Walker Lake Water District currently has regulations for how its customers can water their landscaping. These regulations are detailed below:

#### **Watering Schedule**

The following watering schedule shall be implemented:

- a. Even Numbered houses shall only water on even numbered days.
- b. Odd numbered houses shall only water on odd numbered days.

Watering should be confined to the cooler hours of the day and shall be limited to the morning hours prior to 10:00 AM and evening hours after 6:00 PM.

#### **Overspray Not Allowed**

Sprinklers shall be set so that no overspray of driveways, roads, native vegetation or other non-planted areas will occur. This may be accomplished by proper location of sprinklers and by reducing the volume to limit water coverage area.

#### **Excessive Use of Water**

Excessive use of water which results in flooding and run-off from the property shall not be permitted.

#### **Outside Use of Water Not for Irrigation**

The use of water for washing vehicles, boats, buses, trucks, trailers and other major objects shall only be permitted with a positive shut-off nozzle attached to the outlet end of the hose being used. Hoses shall not be allowed to run free in non-landscaped areas.

## **Hand Watering of Landscaped Areas**

A positive shut-off nozzle shall be used on all hoses which are being used for hand watering of landscape and gardens.

## **Decorative and Recreational Use of Water**

Only fountains and pools which are equipped with recycling pumps shall be permitted.

### **3.3.3 Use of Water for Construction**

Special arrangements shall be made with the Walker Lake Water District for the use of a fire hydrant for construction water. The water district will install a hydrant flow meter, on a designated fire hydrant, for construction use. The watering of gravel road shall only be permitted when the health and safety of the residents is at risk. The rates adopted by the Walker Lake Water District shall apply to the volume of water taken through the fire hydrant water meter.

### **3.3.4 Non-Authorized Use of Water**

Water through any connection shall not be permitted if the customer has received notification from the District that broken or defective plumbing exists on the premises and the customer has failed to make necessary repairs after five days of receipt of the written notice.

### **3.3.5 Penalty for Violation of Provisions of this Plan**

Penalties will be imposed by the Walker Lake Water District for violations of the provisions of the Water Conservation Plan. Penalties will vary from a verbal warning to termination of service based on the frequency of violations. (See the Walker Lake Water District Water Rate Ordinance)

Violations may be removed from the customer's service record after three years of compliance with the provisions of this plan.

### **3.3.6 Appeal Procedure**

Any customer who seeks a variance from any of the provisions of this plan shall notify the Walker Lake Water District in writing no less than fourteen (14) calendar days prior to the Board meeting at which a hearing is requested. The notice shall explain in detail the reasons for the requested variance. Presentation of pertinent fact may be made at the board meeting. The Board of Directors of the Water District shall make a determination at the meeting and will advise the customer(s) in writing of the final decision.

### **3.3.7 Exceptions to the Provisions of this Water Conservation Plan**

Exceptions to the provision of this plan may be made for water dependent industries, commercial nurseries, golf courses and commercial car and truck washing facilities. A written request for non-compliance shall be made to the Walker Lake Water District. After Board approval, a “Non-Compliance Permit” will be issued for a period of two years. The water user may apply for a renewal permit at the end of each two-year permit term. A “Non-Compliance Permit” is non transferable.

Unless prior arrangements have been made with the Walker Lake Water District, three consecutive months of non-use of water under a “Non-Compliance Permit” shall be grounds for cancellation of said permit.

### **3.3.8 Rights of Water District to Impose Restrictions**

The Walker Lake Water District may, during period of severe drought or insufficient supply of water due to other circumstance, impose additional restrictions in the water service area to insure that a sufficient supply of water is available for the public health and safety. Some of these additional restrictions are outlined in Appendix A.

## SECTION 4 – CONSERVATION MEASURES

### 4.1 Plumbing Standards

The most recent federal plumbing standards are included in Table 4.1. These standards are applicable to all water utility service areas. California’s standards are included for reference since California’s standards are more stringent in many cases. These standards also show that there are plumbing fixtures available that exceed the federal standards, and offer consumers alternatives that maximize conservation efforts.

**Table 4.1  
Federal and California Plumbing Standards**

Device	FEDERAL ENERGY POLICY ACT (FEPA)		CALIFORNIA	
	Manufacture	Effective Date	Sale and Installation	Effective Date
Shower Heads	2.5 gpm*	1/1/1994	2.5 gpm	3/20/1992
Lavatory Faucets	2.5gpm	1/1/1994	2.2 gpm	3/20/1992
Sink Faucets	2.5gpm	1/1/1994	2.2 gpm	3/20/1992
Metering Faucets	**	1/1/1994	†	7/1/1992
Tub Spout Diverters	Not Included in FEPA		0.1 to 0.3‡	3/20/1992
Residential Toilets	1.6 gpf	1/1/1994	1.6 gpf	3/20/1992
Flushometer Valves	1.6 gpf	1/1/1997	1.6 gpf	1/1/1992
Commercial Toilets	1.6gpf	1/1/1997	1.6 gpf	1/1/1994
Urinals	1.0 gpf	1/1/1994	1.0 gpf	1/1/1992

\* Gallons per minute

\*\* 0.25 gal/cycle (pertains to maximum water delivery per cycle)

† Hot water maximum flow rate range from 0.25 to 0.75 gal/cycle and/or from 0.5 gpm to 2.5 gpm, depending on controls and hot water system

‡ 0.1 (new) to 0.3 gpm (After 15,000 cycles of diverting)

### 4.2 Walker Lake Water District Conservation Measures

**4.2.1 Establishment of a Conservation Budget:** All materials and labor associated with conservation will require funding. Because of the small size of the system, funding will be limited, so the budget will be conservative. Cost estimates will be made prior to the start of any program and nothing will be implemented prior to the completion of the budget.

**4.2.2 Water Watcher Procedures:** Large water utilities employ full-time personnel who specialize in water waste detection and enforcement. Their duties include patrolling neighborhoods searching for water waste problems, levying fines and providing educational materials to customers. It is not feasible for the Walker Lake Water District to hire personnel for this purpose; however, existing field personnel should be trained in waste recognition and enforcement procedures. These procedures include the following:

- Definitions of water restrictions and any exceptions. This might include provisions for new sod or seed and differences between residential, commercial, industrial and institutional watering schedules.
- Instructions on how to properly operate water valves
- Hydrant use

- Water stealing
- Distribution of educational materials
- Customer service/relations
- Waste warnings
- Waste complaint system, (Appendix F has an example waste complaint form)
- Issuance of fee assessments

Warning notices designed to hang on doorknobs will be considered as part of the procedures. The intent of these procedures is to increase the effectiveness of the water ordinance.

#### **4.3 Water Users Conservation Measures**

Appendix B contains a list of conservation measures that can be implemented by water consumers. The list includes measures for residential, commercial, industrial and institutional applications

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## APPENDIX A – EMERGENCY/DROUGHT CONSERVATION MEASURES

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In addition to the routine water use restrictions in this conservation plan, the following conservations measures shall be implemented in response the severity of a drought or a water system emergency.

<b>Event</b>	<b>Response</b>
Static groundwater level decreases by 7 feet	Newspaper
Static groundwater level decreases by 12 feet	Reduce yard watering to two days per week. Even numbered houses may water on Wednesdays and Saturdays, while odd numbered residences may water on Tuesdays and Fridays
Static groundwater level decreases by 15 feet	Vehicle and boat washing will be prohibited. No washing of driveways or other outside non-irrigation use will be allowed. District personnel will patrol the community for water wasting.
Static groundwater level decreases by 18 feet	Sprinkler irrigation will be suspended. Drought punitive water rates will be implemented (See District Rate Ordinance)

## APPENDIX B – CONSERVATION MEASURES

Conservation measures are divided into two types: (1) Hardware/Equipment and (2) Behavioral/Managerial. Each of these is subdivided into five categories of application: (1) Residential, (2) Landscape, (3) Industrial, Commercial, and Institutional (ICLI), (4) Agricultural, and (5) Purveyor. The following conservation measures will be classified first by application then by type.

### A.1 RESIDENTIAL CONSERVATION MEASURES

#### A.1.1 Behavioral Measures

**A.1.1.1 Residential Water Audits.** Water Audits could target high use customers first and then be offered to all customers. The following elements should be part of an effective audit:

- Purpose of the audit
- Estimation of use for all fixtures and appliances
- Check for repairs and leaks
- Evaluation of landscape (See “Landscape Conservation Measures”)
- Evaluation of outdoor water use
- Evaluate efficiency measures
- Educate customers using available fliers

A residential water audit should take no more than 30 to 45 minutes.

**A.1.1.2 Additional Measures:** The sample pamphlets in Appendix G include additional behavioral conservation measures

#### A.1.2 Hardware/Equipment Measures

The following is a list of devices/practices that will reduce water consumption in the home.

Measure	Description
<b>Bathroom/Kitchen Fixtures</b>	
Low-flow toilets	1.6 gallons per flush
Toilet retrofit devices	Bladders (bags), dams, early close flappers, other hardware and adjustments
Toilet Leak repairs	Includes detection (dye tabs) and replacement of worn parts
Low-volume shower heads	2.5 gallons per minute at 80 psi
Showerhead retrofit devices	Includes temporary cutoff valves and restrictors
Low-volume faucets	2.5 gallons per minute at 80 psi
Faucet retrofit devices	Includes aerators, activation sensors, self-closing meter valves
Faucet maintenance	Includes washer replacement, repacking, tightening and cleaning aerators
Water pressure reduction	Only needed if house pressure exceeds what's required
<b>High Efficiency Appliances</b>	
Clothes washers	27 gallons per load
Dish washer	4.5 gallons per load

## A.2 LANDSCAPE CONSERVATION MEASURES

### A.2.1 Behavioral Measures

#### A.2.1.1 Landscape Water Audits

Landscape water audits should be conducted on park and golf course irrigation systems and could be considered an option on residential irrigation systems, targeting high-volume users.

The following elements should be part of an effective audit:

- Purpose of the audit
- Estimation of outdoor use based on meter records
- Check for repairs and leaks
- Evaluation of landscape (size, soil, amount of turf, types of plants)
- Evaluation of irrigation system (Timers, Use of drip, Precipitation amounts)
- Efficiency recommendations
- Educate customers using available fliers

A residential landscape audit should take no more than an hour. Parks and golf courses could take substantially longer.

#### A.2.1.2 Xeriscape™

Xeriscape is a method of landscaping that employs low-water use plants, turf, ground covers, shrubs and trees. It includes careful planning, soil analysis, and irrigation system design.

#### A.2.1.3 Additional Measures

The sample pamphlets in Appendix G include additional behavioral conservation measures.

### A.2.2 Hardware/Equipment Measures

Landscape hardware measures consist of two basic groups (1) Landscape materials and (2) irrigation equipment. The following is a list of landscape materials and irrigation equipment and how they should be used to support water conservation principles.

Measure	Description
<b>Landscape Materials</b>	
Trees, plants and grass	Should be well suited to climate and altitude and be drought tolerant
Organic Mulch	Grass clippings, leaves, wood chips, bark, pine needles. Organic Mulches help to retain soil moisture and keep ground cool around plants
Inorganic Mulch	Boulders, gravel, pavers, decomposed granite, and stepping stones. Inorganic mulches are generally more for decorative purposes but they reduce the amount of trees, plants and turf, thereby conserving water
Compost	Made of manure or biosolids and wood, straw, grass and leaves. Helps plants stay healthy and retains moisture in the soil

<b>Irrigation Equipment</b>	
Valves	Should be sized to meet requirements and checked periodically for leaks
Sprinkler heads	Should match water volume requirements of area being irrigated
Sprinkler nozzles	Should have proper arc of coverage and proper trajectory
Irrigation controllers	Should have required number of stations, programs and starts. Also rain delays and sensor terminals
Drip irrigation	Insures Water is directs to where it is needed

### **A.3 General Residential Behavioral Measures**

This list of conservation measures is divided into four parts: Home, Landscaping, Community, and Miscellaneous.

#### **Home Behaviors**

1. When washing dishes by hand, don't let the water run while rising. Fill one sink with wash water and the other with rinse water.
2. Evaporative coolers require a seasonal maintenance checkup. For more efficient cooling, check your evaporative cooler annually.
3. Run your washing machine and dishwasher only when they are full and you could save 1000 gallons a month.
4. Use the garbage disposal sparingly. Compost instead and save gallons every time.
5. Keep a pitcher of water in the refrigerator instead of running the tap for cold drink so no water goes down the drain.
6. Check your water meter and bill to track water usage.
7. Wash produce in the sink or a pan that is partially filled with water instead of using the tap.
8. Use a broom instead of a hose to clean your driveway or sidewalk to save 80 gallons of water each time.
9. If your shower can fill a one gallon bucket in less than 20 seconds, replace it with a more efficient showerhead.
10. Collect the water you use for rinsing produce and reuse it to water houseplants.
11. Check outdoor faucets and fixtures for leaks.
12. When purchasing a new appliance, look for one with adjustable cycle and load sizes.
13. Keep showers to less than 5 minutes to save up to 1000 gallons a month.
14. Install low-volume toilets.
15. Reuse water from a fish tank to water plants, as the water is rich in nitrogen and phosphorous, making it a free and effective fertilizer.
16. Put food coloring in your toilet tank and if it seeps into the toilet bowl there is a leak. It is easy to fix and can save up to 600 gallons a month.
17. Plug the bathtub before turning the water on, and adjust the temperature as the tub fills.
18. Only use one glass for drinking each day to reduce the need for washing dishes.
19. Don't use running water to thaw food.
20. Fix a leaky faucet to save 140 gallons of water a week.
21. Match the water level to the size of the load when doing laundry.
22. Turn faucets off tightly after use.
23. Soak pots and pans instead of running water over them.

24. Locate your master water shutoff valve to save water and prevent water damage in case of a broken pipe.
25. Turn off water while brushing your teeth.
26. Make sure your toilet flapper doesn't stick open after flushing.
27. Make sure there are aerators on all your faucets.
28. Install an instant water heat on your kitchen sink so you don't have to run the water until it gets hot.
29. Cut back on rinsing if you have a new dishwasher as they clean more efficiently than older models.
30. Bathe your young children together.
31. Winterize outdoor spigots to prevent pipes from bursting or freezing.
32. Insulate hot water pipes to reduce the amount of water you have to run to reach the desired temperature.
33. Drop tissues in the trash instead of flushing them.
34. Place a toilet dam or bottle of water in the toilet tank on toilets made prior to 1980 to reduce the amount of water required for each flush.
35. Install water softening systems only when necessary.
36. Wait until you have a full load to do laundry.
37. Cook food in the minimum amount of water required.
38. Turn off water while you shampoo and condition to save more than 50 gallons a week.

### **Landscape Behaviors**

1. Adjust your sprinkler system to keep water on your landscaping and off of the driveway, sidewalk, house, and the street.
2. Avoid planting turf . If you must plant a lawn consult the University of Nevada Reno Extension Service for proper procedures for watering and maintaining your lawn.
3. Plant during the spring or fall when the watering requirements are lower.
4. Water early in the morning or late in the evening when temperatures are lower to minimize evaporation.
5. Use a layer of organic mulch around plants to reduce evaporation and save hundreds of gallons of water a year.
6. Use more frequent, shorter watering intervals to reduce runoff and allow for better absorption every time you water.
7. Install a rain shut-off device on your automatic sprinklers to eliminate unnecessary watering.
8. Periodically check your sprinkler system for leaks and keep the heads in good shape.
9. Don't water on windy days.
10. Group plants by watering needs to maximize the benefits of your watering time.
11. Regularly weed your lawn and garden, as weed compete with desirable plants for nutrients, light and water.
12. Apply the minimum amount of fertilizer as it increases water consumption requirements.
13. Aerate your lawn so water will reach the roots instead of running off the surface.

## **Community Behaviors**

1. Encourage your school system and local government to develop and promote a water conservation ethic among children and adults.
2. Make suggestions to your employer to save water at work.
3. Support projects that use reclaimed wastewater for irrigation and other uses.
4. Encourage your friends and neighbors to be part of a water-conscious community.
5. Report broken pipes, open hydrants and errant sprinklers to property owners or the Walker Lake Water District.

## **Miscellaneous Behaviors**

1. Install covers on pools and spas and check for leaks around pumps.
2. Check your pool for leaks if you have an automatic refilling device.
3. Use a commercial car wash that recycles water.
4. Don't buy recreational water toys that require a constant flow of water.
5. Bathe pets outdoors in areas in need of water.
6. Reuse towels to reduce laundering requirements.
7. Reuse water from backwashing your pool on your landscaping.

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## APPENDIX C – PLANTS FOR THE WALKER LAKE AREA

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The following list of plants can be found on the Truckee Meadows Water Authority (TMWA) website at [www.tmwalandscapguide.com](http://www.tmwalandscapguide.com).

### PERENNIAL FLOWERS

Eriogonum umbellatum/Sulfur Flowered Buckwheat (Perennial)--water use: Very Low

Achillea species/Yarrow (Perennial)--water use: Low

Agastache cana/Bubblegum Mint (Perennial)--water use: Low

Aurinia saxatilis/Basket-of-Gold (Perennial)--water use: Low

Coreopsis species/Tickseed (Perennial)--water use: Low

Crocus species/Spring Crocus (Perennial)--water use: Low

Dianthus species/Pinks (Perennial)--water use: Low

Eschscholzia californica/California poppy (Perennial)--water use: Low

Gaillardia grandiflora/Blanket Flower (Perennial)--water use: Low

Iris germanica/Iris germanica (Perennial)--water use: Low

Linum species/Flax (Perennial)--water use: Low

Narcissus species/Daffodil or Narcissus (Perennial)--water use: Low

Nepeta racemosa/Catmint (Perennial)--water use: Low

Oenothera species/Evening Primrose (Perennial)--water use: Low

Perovskia atriplicifolia/Russian Sage (Perennial)--water use: Low

Sedum species/Stonecrop (Perennial)--water use: Low

Senecio Cineraria/Dusty Miller (Perennial)--water use: Low

Stachys byzantina/Lamb's Ears (Perennial)--water use: Low

Thermopsis montana/No Lupine (Perennial)--water use: Low

Tulbaghia violacea/Society Garlic (Perennial)--water use: Low

Alcea rosea/Hollyhock (Perennial)--water use: Moderate

Antirrhinum majus/Snapdragon (Perennial)--water use: Moderate

Armeria maritima/Sea Pinks (Perennial)--water use: Moderate

Aster species/Aster (Perennial)--water use: Moderate

Echinacea purpurea/Coneflower (Perennial)--water use: Moderate

Gaura lindheimeri/Gaura (Perennial)--water use: Moderate -- Add to

Geranium species/Handy Geranium (Perennial)--water use: Moderate

Gypsophila species/Baby's Breath (Perennial)--water use: Moderate

Hemerocallis hybrids/Daylily (Perennial)--water use: Moderate

Heuchera sanguinea/Coral Bells (Perennial)--water use: Moderate

Iberis sempervirens/Candytuft (Perennial)--water use: Moderate

Kniphofia uvaria/Red Hot Poker (Perennial)--water use: Moderate

Lavandula angustifolia/Lavender (Perennial)--water use: Moderate

Lilium species/Lily (Perennial)--water use: Moderate

N/A/Pussy toes (Perennial)--water use: moderate

Papaver species/Poppy (Perennial)--water use: Moderate

Penstemon species/Beard Tongue (Perennial)--water use: Moderate

Platycodon grandiflorus/Balloon Flower (Perennial)--water use: Moderate

Rudbeckia fulgida/Black-Eyed Susan (Perennial)--water use: Moderate

Salvia Species/Sage or Salvia (Perennial)--water use: Moderate

Saponaria species/Soapwort (Perennial)--water use: Moderate

Tanacetum species/Painted or Michaelmas Daisy (Perennial)--water use: Moderate

Tulipa species/Tulip (Perennial)--water use: Moderate

Veronica spicata/Spike Speedwell (Perennial)--water use: Moderate

Viola species/Violet or Pansy (Perennial)--water use: Moderate

## GROUNDCOVERS, VINES, AND GRASSES

Opuntia polyacantha/Prickly Pear Cactus (Groundcovers)--water use: Very Low

Clematis species/Clematis (Groundcovers)--water use: Low

Euphorbia species/Spurge (Groundcovers)--water use: Low

*Helictorichon sempervirens*/Blue Oat Grass (Groundcovers)--water use: Low

*Hypericum calycinum*/Jacob's Ladder or Aaron's Beard (Groundcovers)--water use: Low

*Juniperus horizontalis*/Groundcover Junipers (Groundcovers)--water use: Low

*Lathyrus latifolius*/Perennial Sweet Pea (Groundcovers)--water use: Low

*Lonicera* species/Honeysuckle (Groundcovers)--water use: Low

*Panicum virgatum*/Switch Grass (Groundcovers)--water use: Low

*Polygonum* species/*Polygonum* (Groundcovers)--water use: Low

*Santolina* species/Lavender Cotton (Groundcovers)--water use: Low

*Vinca minor*/Dwarf Periwinkle (Groundcovers)--water use: Low

*Wisteria sinensis*/Chinese Wisteria (Groundcovers)--water use: Low

*Zauschneria californica*/California Fuschia (Groundcovers)--water use: Low

*Calmagrostis x acutiflora*/Feather Reed Grass (Groundcovers)--water use: Moderate

*Campsis radicans*/Red Trumpet Creeper (Groundcovers)--water use: Moderate

*Cerastium tomentosum*/Snow in Summer (Groundcovers)--water use: Moderate

*Delosperma cooperi*/Hardy Purple Ice Plant (Groundcovers)--water use: Moderate

*Hedera helix*/Ivy (Groundcovers)--water use: Moderate

*Helianthemum nummularium*/Sunrose (Groundcovers)--water use: Moderate

*Mahonia repens*/Creeping Mahonia (Groundcovers)--water use: Moderate

N/A/Northern seacats (Groundcovers)--water use: moderate

*Phlox subulata*/Moss Pink (Groundcovers)--water use: Moderate

*Potentilla neumanniana*/Cinquefoil (Groundcovers)--water use: Moderate

*Sedum* species/Stonecrop (Groundcovers)--water use: Moderate

*Thymus* species/Thyme (Groundcovers)--water use: Moderate

## SHRUBS

*Artemisia tridentata* var. *tridentata*/Big Sagebrush (Shrubs)--water use: Very Low

*Atriplex canescens*/Four Wing Saltbrush (Shrubs)--water use: Very Low

Chrysothamnus nauseosus/Rubber Rabbitbrush (Shrubs)--water use: Very Low

Amelanchier species/Serviceberry or Juneberry (Shrubs)--water use: Low

Aronia species/Chokeberry (Shrubs)--water use: Low

Berberis species/Barberry (Shrubs)--water use: Low

Caragana species/Peashrub (Shrubs)--water use: Low

Caryopteris x clandonensis/Blue Mist Spiraea (Shrubs)--water use: Low

Chaenomeles speciosa/Flowering Quince (Shrubs)--water use: Low

Cytisus species/Broom (Shrubs)--water use: Low

Elaeagnus commutata/Silverberry (Shrubs)--water use: Low

Euonymus species/Euonymus (Shrubs)--water use: Low

Forestiera neomexicana/New Mexico Privet (Shrubs)--water use: Low

Genista species/Dwarf Broom (Shrubs)--water use: Low

Hibiscus syriacus/Rose of Sharon (Shrubs)--water use: Low

Ligustrum species/Privet (Shrubs)--water use: Low

Lonicera tatarica/Tatarian Honeysuckle (Shrubs)--water use: Low

Mahonia aquifolium/Oregon Grape (Shrubs)--water use: Low

Pinus mugo/Mugo Pine (Shrubs)--water use: Low

Prunus species/Bush Cherry (Shrubs)--water use: Low

Pyracantha coccinea/Firethorn or Pyracantha (Shrubs)--water use: Low

Rhus species/Sumac (Shrubs)--water use: Low

Ribes aureum/Golden Currant (Shrubs)--water use: Low

Shepherdia argentea/Silver Buffaloberry (Shrubs)--water use: Low

Symphoricarpos albus/Snowberry (Shrubs)--water use: Low

Syringa vulgaris/Common Lilac (Shrubs)--water use: Low

Yucca species/Yucca (Shrubs)--water use: Low

Acer circinatum/Vine Maple (Shrubs)--water use: moderate

Amorpha canescens/Leadplant (Shrubs)--water use: moderate

- Buddleia species/Butterfly Bush (Shrubs)--water use: Moderate
- Catalpa x Chilopsis/Chitalpa (Shrubs)--water use: moderate
- Ceratoides lanata/Winterfat (Shrubs)--water use: moderate
- Cercocarpus ledifolius/Mt. Mahogany (Shrubs)--water use: moderate
- Chamaebatiaria millifolium/Fernbush (Shrubs)--water use: moderate
- Chilopsis linearis/Desert or Flowering Willow (Shrubs)--water use: moderate
- Cotoneaster species/Cotoneaster (Shrubs)--water use: Moderate
- Cowania mexicana/Cliffrose (Shrubs)--water use: moderate
- Fallugia paradoxa/Apache Plume (Shrubs)--water use: moderate
- Forsythia species/Forsythia (Shrubs)--water use: Moderate
- Hamamelis x intermedia/Witch Hazel (Shrubs)--water use: Moderate
- Hesperaloe parviflora/Red Yucca (Shrubs)--water use: moderate
- Juniperus chinensis/Sea Green Juniper (Shrubs)--water use: Moderate
- Kerria japonica/Kerria (Shrubs)--water use: Moderate
- Kolkwitzia amabilis/Beautybush (Shrubs)--water use: moderate
- Philadelphus virginalis/Mock Orange (Shrubs)--water use: Moderate
- Picea glauca var. albertiana 'Conica'/Dwarf Alberta Spruce (Shrubs)--water use: Moderate
- Pinus contorta 'Latifolia'/Lodgepole Pine (Shrubs)--water use: moderate
- Potentilla fruticosa/Shrubby Potentilla (Shrubs)--water use: Moderate
- Purshia tridentata/Bitterbrush (Shrubs)--water use: moderate
- R. frangula 'Asplenifolia'/Fernleafed buckthorn (Shrubs)--water use: Moderate
- R. frangula 'Columnaris'/Tall Hedge Buckthorn (Shrubs)--water use: Moderate
- Rhamnus frangulia/Sea buckthorn (Shrubs)--water use: Moderate
- Rosa species/Hardy Shrub Roses (Shrubs)--water use: Moderate
- Spiraea species/Spiraea (Shrubs)--water use: Moderate
- Symphoricarpa x chenaultii/Coralberry 'Hancock' (Shrubs)--water use: Moderate

*Thuja occidentalis*/American Arborvitae (Shrubs)--water use: Moderate

*Viburnum* species/*Viburnum* (Shrubs)--water use: Moderate

## TREES

*Acer ginnala*/Amur Maple (Trees)--water use: Deep Water 10-14 days

*Ailanthus altissima*/Tree of Heaven (Trees)--water use: Deep Water 10-14 days

*Calocedrus decurrens*/Incense Cedar (Trees)--water use: Deep Water 10-14 days

*Catalpa* species/*Catalpa* (Trees)--water use: Deep Water 10-14 days

*Cedrus atlantica glauca*/Blue Atlas Cedar (Trees)--water use:Deep Water 10-14 days

*Celtis occidentalis*/Hackberry (Trees)--water use:Deep Water 10-14 days

*Crataegus* species/Hawthorn (Trees)--water use:Deep Water 10-14 days

*Elaeagnus angustifolia*/Russian Olive (Trees)--water use:Deep Water 10-14 days

*Gleditsia triacanthos inermis*/Honeylocust (Trees)--water use:Deep Water 10-14 days

*Juniperus* species/Tree Juniper (Trees)--water use:Deep Water 10-14 days

*Maackia amurensis*/Maackia (Trees)--water use:Deep Water 10-14 days

*Maclura pomifera*/Osage Orange (Trees)--water use:Deep Water 10-14 days

*Malus* hybrids/Crabapple (Trees)--water use:Deep Water 10-14 days

*Pinus* species/Pine (Trees)--water use:Deep Water 10-14 days

*Platanus acerifolia*/Sycamore (Trees)--water use:Deep Water 10-14 days

*Quercus* species/Oak (Trees)--water use:Deep Water 10-14 days

*Robinia* species/Locust (Trees)--water use:Deep Water 10-14 days

*Sequoiadendron giganteum*/Giant Redwood (Trees)--water use:Deep Water 10-14 days

*Ulmus parvifolia*/Chinese elm (Trees)--water use:Deep Water 10-14 days

*Zelkova serrata*/Zelkova (Trees)--water use:Deep Water 10-14 days

*Aesculus hippocastanum*/Common Horsechestnut (Trees)--water use:Deep Water 7-10 days

*Carpinus betulus*/Hornbeam (Trees)--water use:Deep Water 7-10 days

*Cotinus coggygria*/Smoke Tree (Trees)--water use:Deep Water 7-10 days

*Cupressus glabra*/Arizona Cypress (Trees)--water use:Deep Water 7-10 days

Fraxinus species/Ash (Trees)--water use:Deep Water 7-10 days

Ginkgo biloba/Maidenhair Tree (Trees)--water use:Deep Water 7-10 days

Koelreuteria paniculata/Golden Rain Tree (Trees)--water use:Deep Water 7-10 days

Laburnum watereri/Golden Chain Tree (Trees)--water use:Deep Water 7-10 days

Liquidambar styraciflua/Sweetgum (Trees)--water use:Deep Water 7-10 days

Liriodendron tulipifera/Tulip Tree (Trees)--water use:Deep Water 7-10 days

Malus domestica/Fruiting Apple Tree (Trees)--water use:Deep Water 7-10 days

Morus alba/Mulberry (Trees)--water use:Deep Water 7-10 days

Phellodendron amurense/Amur Cork Tree (Trees)--water use:Deep Water 7-10 days

Picea species/Spruce (Trees)--water use:Deep Water 7-10 days

Pistacia chinensis/Chinese Pistache (Trees)--water use:Deep Water 7-10 days

Prunus species/Plum or Cherry (Trees)--water use:Deep Water 7-10 days

Pyrus Species/Pear (Trees)--water use:Deep Water 7-10 days

Sophora japonica/Japanese Pagoda Tree (Trees)--water use:Deep Water 7-10 days

Sorbus species/Mountain Ash (Trees)--water use:Deep Water 7-10 days

Thuja occidentalis/Arborvitae (Trees)--water use:Deep Water 7-10 days

Tilia species/Linden (Trees)--water use:Deep Water 7-10 days

Gymnocladus dioica/Kentucky Coffee Tree (Trees)--water use: Moderate

Juniperus monosperma/Singleseed Juniper (Trees)--water use: moderate

Pinus edulis/Pinon Pine (Trees)--water use: moderate

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## APPENDIX D – METER READING INSTRUCTIONS

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### Locate your Meter

Most water meters will be located outside in front of your house next to the curb on the street under a steel or concrete lid.

### Reading your meter

There are two basic types of meters: a dial with a needle that measures in tenths of a cubic foot and a digital meter that measures from 100,000 down to 1 cubic foot. Most meters also have a small triangle on the face called a flow indicator. It will move when there is water passing through it. Read your meter from left to right.

### Measuring Water Activities

It is possible to measure the water use of certain activities. These activities include, but are not limited to the following:

- Shower or bath use
- Watering the garden
- Washing clothes or dishes
- Flushing a toilet
- Washing a car

To measure the water use of an activity, do the following (in order):

1. Make sure all water is turned off. This includes all faucets (indoor and outdoor), appliances, swamp coolers and icemakers.
2. Write down the meter reading to two decimal places.
3. Perform the activity. Be sure to measure the amount of time in minutes that the activity required.
4. At the end of the activity, read the meter again. Subtract the first meter reading from the second to determine the amount of water used for the activity in cubic feet. Multiply the resulting amount by 7.48 to determine the amount of gallons of water used. Divide this number by the time elapsed during the activity to obtain the activities water requirements in gallons per minute.

### Detecting Leaks

1. Make sure all water is turned off. This includes all faucets (indoor and outdoor), appliances, swamp coolers and icemakers.
2. Write down the meter reading to two decimal places and the time of day to the minute.
3. Wait at least an hour before reading the meter a second time. Make sure no water is used during the test. Read the meter at the end of the test and record the time to the minute. If the flow indicator is moving during the test you have a leak or a meter malfunction.

4. At the end of the activity, read the meter again. Subtract the first meter reading from the second to determine the amount of water used for the activity in cubic feet. Multiply the resulting amount by 7.48 to determine the amount of gallons of water passed through the meter during the test period.
5. Divide the amount of water by the time elapsed during the test to obtain the amount of water that went through the meter in gallons per minute.
6. To measure the amount lost over time, multiply the gallons per minute by the following:
  - 1,440 for gallons per day
  - 43,920 for gallons per month
  - 527,040 for gallons per year
7. Locating a leak is a process of elimination. Shut off one toilet at a time at the wall. Go to the meter to check to see if the flow indicator is still moving. If the triangle has stopped moving, you have discovered the leak. If not, go on the next one and repeat Step 7.
8. Check your sprinkler system. Shut off the siphon valve and check the meter.
9. Check your main service line. You will need to shut off the valve between your house and the meter. If the meter stops, the leak is between the meter and the valve. If you do not have a shut off going to your house, you need to install one! Do not operate the shut-off valve in the Walker Lake Water District meter box.
10. These steps can be repeated for every fixture and fitting in your home. In the event you cannot locate the leak, you should call a professional plumber to find and fix it.

## WATER

- [www.amsa-cleanwater.org](http://www.amsa-cleanwater.org)
- [www.energystar.gov](http://www.energystar.gov)
- [www.awwa.org](http://www.awwa.org)

## DROUGHT

- DroughtMonitor@ndmc.unlv.edu

## LANDSCAPE

- [www.usda.gov/news/garden.htm](http://www.usda.gov/news/garden.htm)
- [www.tmwlandscapeguide.com/landscape\\_guide/interactive/index.php](http://www.tmwlandscapeguide.com/landscape_guide/interactive/index.php)

## EDUCATION

- [www.wateruseitwisely.com](http://www.wateruseitwisely.com)
- [www.washoeet.dri.edu](http://www.washoeet.dri.edu)

## INSTITUTIONAL

- [www.lvvwd.com](http://www.lvvwd.com)
- [www.snwa.com](http://www.snwa.com)
- [www.co.washoe.nv.us/water\\_dept/rwpc/regionalplm](http://www.co.washoe.nv.us/water_dept/rwpc/regionalplm)
- [www.tmh20.com](http://www.tmh20.com)
- [www.cabq.gov](http://www.cabq.gov)
- [www.ci.phoenix.az.us/WATER/wtrteach.html](http://www.ci.phoenix.az.us/WATER/wtrteach.html)
- [www.owue.water.ca.gov/leak/faq/faq.cfm](http://www.owue.water.ca.gov/leak/faq/faq.cfm)

## LEAK DETECTION

- [www.who.int/docstore/water\\_sanitation\\_health/leakage/begin.html](http://www.who.int/docstore/water_sanitation_health/leakage/begin.html)

# WALKER LAKE WATER DISTRICT WATER WASTE REPORT FORM

Please use this form to report water waste. Our investigators must witness the waste in progress to issue a violation form. Please provide as much information as possible to help us identify the problem.

TIME OBSERVED:

DATE OBSERVED (M/D/Y):

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ADDRESS OR LOCATION OF WASTE:

Street:	City:
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MAJOR CROSS STREETS:

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- |   |   |
|---|---|
| <input type="checkbox"/> Over-Watering          | <input type="checkbox"/> Fountain/Water Feature Violation |
| <input type="checkbox"/> Broken Sprinkler       | <input type="checkbox"/> Broken Pipe/Onsite Leak          |
| <input type="checkbox"/> Time-of-Day Violation  | <input type="checkbox"/> Misting System Violation         |
| <input type="checkbox"/> Assigned Day Violation | <input type="checkbox"/> Other                            |

DESCRIPTION:

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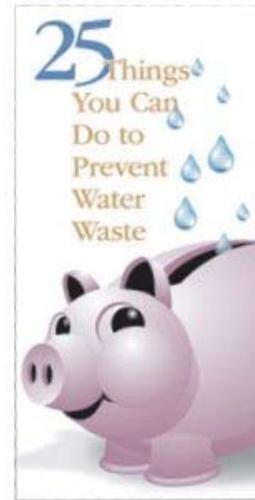
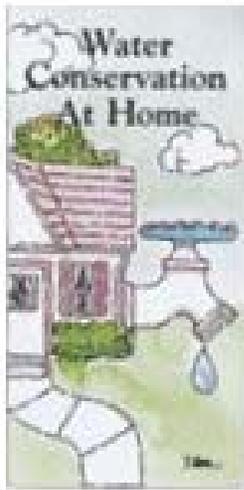
## APPENDIX G – AWWA CONSERVATION PAMPHLETS

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The following pamphlets are available on the AWWA website at: [www.awwa.org/bookstore](http://www.awwa.org/bookstore)

***Figures 1.1, 1.2, 1.3***

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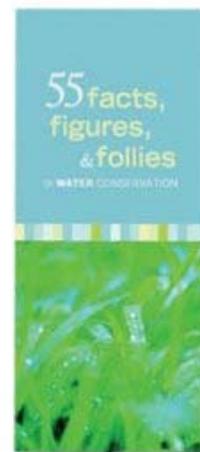
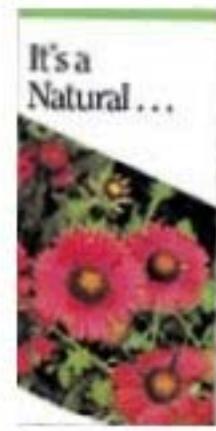
**Water Conservation at Home** discusses in-home conservation practices for bathroom, kitchen and outdoor water use (see Figure 1.1).

**Landscaping to Save Water** explains the seven principles in the Xeriscape(tm) concept that promotes attractive landscapes, conserves water, and protects the environment (see Figure 1.2).

**25 Things You Can Do to Prevent Water Waste** has 25 easy things people can do to conserve water inside and outside their homes (see Figure 1.3).

***Figures 1.4, 1.5, 1.6***

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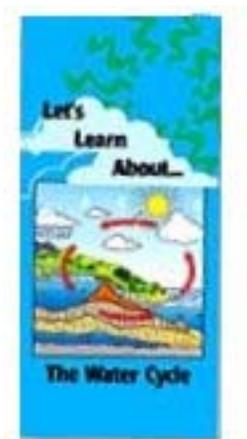
**5 Basic Ways to Conserve Water** provides 5 things people can do to cut water use by 25% (see Figure 1.4)

**It's a Natural** is an introduction to planning a water-conserving home landscape (see Figure 1.5)

**55 Facts, Figure and Follies of Water Conservation** is a list of 55 items that promote water conservation (see Figure 1.6).

*Figures 1.7, 1.8, 1.9*

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**Let's Learn About...The Water Cycle** diagrams the seven stages of the water cycle (see Figure 1.7)

**A Consumer's Guide to Water Conservation the Inside Story** gives eight ways to reduce water waste inside the home (see Figure 1.8).

**A Consumer's Guide to Water Conservation the Outside Story** gives eight ways to reduce water waste in landscaping (see Figure 1.9).

**APPENDIX H –EPA RESIDENTIAL BENCHMARKS**

<b>Type of Use</b>	<b>Likely Range of Values</b>
<b><i>INDOOR USES</i></b>	
Average household size	2.0 – 3.0 persons
Frequency of toilet flushing	4.0 – 6.0 flushes per person per day
Flushing volumes	1.6 – 8.0 gallons per flush
Fraction of leaking toilets	0 – 30 percent
Showering frequency	0 – 1.0 showers per person per day
Duration of average shower	5 – 15 minutes
Shower flow rates	1.5 – 5.0 gallons per minute
Bathing frequency	0 – 0.2 baths per person per day
Volume of water	30 – 50 gallons per cycle
Washing machine use	0.2 – 0.5 loads per person per day
Volume of water	45 – 50 Gallons per cycle
Dishwasher use	0.1 – 0.3 Loads per person per day
Volume of water	10 – 15 gallons per cycle
Kitchen faucet use	0.5 – 5.0 Minutes per person per day
Faucet flow rates	2.0 – 3.0 gallons per minute
<b><i>OUTDOOR USES</i></b>	
Average lot size	5000 – 8000 square feet
Average house size	1200 – 2500 square feet
Landscape area	4000 – 5000 square feet
Fraction of lot size in turf	30 – 50 percent
Water application rates	1 – 5 feet per year
Homes with pools	10 – 25 percent
Pools evaporation losses	3 – 7 feet per year
Frequency of refilling pool	1 – 2 times per year