

# **Deluxe Mobile Home Park**

## **Water Conservation Plan**

**July 1, 2010**

### **Prepared for:**

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## **Introduction**

The water supply in Nevada is a precious commodity and plays an important role in determining Nevada's future. Nevada is the one of the driest states in the nation as well as one of the fastest growing ones. Nevada's future, both from an economic and a quality of life view, depends heavily upon the wise management of the water supply.

Groundwater, in general, provides about 40 percent of the total water supply used in Nevada. In some areas, groundwater provides the entire water supply. Groundwater usage may vary considerably from year-to-year as it is sometimes pumped to supplement surface water sources.

Water use in Nevada can be classified as:

- Domestic (household, both indoor and outdoor) – Met by public supply or private supply (e.g. wells).
- Commercial (businesses) – Met by public supply or private supply (e.g. non-community systems).
- Industrial (manufacturing/construction) – Met by public supply or private supply (e.g. non-community systems).
- Thermoelectric (electric/fossil fuel/geothermal power generation) – Met by public supply in a minor fraction.
- Mining (mining processes) – Supply source varies widely from operation to operation and is dependent upon the mineral being recovered and the recovery process employed.
- Irrigation (land use) – Met by self-supplied or supplied by irrigation companies or districts.
- Livestock (farm needs) – Supply source varies.

While all classifications of water usages have shown an increase over the years, it has historically been irrigation water use which has accounted for the majority of the water use in Nevada.

It has been estimated that the domestic water use accounts for less than 15 percent of the water used in Nevada, but this is expected to rise to nearly 25 percent as the population increases (based upon existing water use patterns and conservation measures). It is expected that Nevada's population will become increasingly concentrated in its primary urban areas of Las Vegas (Clark County), Reno/Sparks (Washoe County) and Carson City, with varied spillover effects on neighboring counties.

It is vitally important that all residents understand the fundamental science of water, how it is managed in the state, and the issues affecting its management. Water education must become a priority and must include education of children as they are our future.

Because Nevada does not have a comprehensive state-wide conservation program, it is reliant upon the individual water suppliers for developing their own conservation programs. In 1991, Nevada enacted a law requiring adoption of conservation plans by water suppliers. Minimum standards for plumbing fixtures were adopted in 1991 (Assembly Bill 359) by Nevada and in 1992 minimum flow standards for plumbing fixtures were adopted by the federal government (National Energy and Policy Conservation Act).

Conservation is an essential part of ensuring adequate water supply as it is no longer feasible to develop new sources. It has proven to be a cost-effective way to reduce demands and/or to extend a given water supply. It can easily be pursued by all water users regardless of the water system type. Key to evaluating the program's effectiveness is the water use measurement (through meters and other measurement devices). Various conservation measures can be put into place and the achievement of the goals set with these measures is vital to combating the expected increase in water usage.

## **Statutory Requirements**

This water conservation plan was prepared for the Deluxe Mobile Home Park in accordance with Nevada Revised Statute (NRS) 540. As outlined in NRS 540.141, the provisions of this plan must include:

- a. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measurements
- g. Conservation Estimates

In addition to the provisions of the water conservation plan, listed above, NRS 540.141 also requires a rate analysis to be performed and included with the submittal.

This plan is being submitted to the Nevada Department of Conservation and Natural Resources (DCNR), Division of Water Resources (DWR) for review and approval prior to its adoption by Deluxe Mobile Home Park, as required by NRS 540.131.

This plan will conform to all public notice requirements as found in NRS 540 and NRS118b. This plan is available for inspection during normal business hours at the on-site manager's office which is located at 301 Tolas Place (Space 29), Fallon, NV 89406.

This is the first Water Conservation Plan for the Deluxe Mobile Home Park.

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, July 1, 2015.

## **System Description**

The Deluxe Mobile Home Park is a privately-owned residential combined community water system and has a current water operation permit, NV0000047. The Deluxe Mobile Home Park provides water to 30 senior residential mobile home site tenants (unmetered) in its service area of Fallon, which is located in Churchill County. The service area boundaries are South Maine and Tolas Place. The service area covers less than one square mile and the terrain is flat.

The estimated population served in 2009 was about 60 individuals. The Deluxe Mobile Home Park estimates that its tenant base will not increase because the park is built out. The State of Nevada, through its State Water Plan, estimates the population growth for Churchill County through 2020 to be 2.28% annually.

The water supply is from groundwater that is not under the direct influence of surface water (e.g. protected wells) and no surface water or groundwater under the influence of surface water sources. The water supply is obtained from the Carson Desert Basin (#101) of the Carson River Basin Groundwater Hydrographic Region (#8).

There is a total of one active well (East Well) supplying the system and a total of two hydro-pneumatic tanks (each 200 gallons). There are no storage tanks.

In response to higher than normal Arsenic levels in existing wells, a shared community well will be put in place and become used and useful in mid-2010. This well will be shared between Deluxe Mobile Home Park, South Maine Mobile Home Park, and Tolas Mobile Home Park. The existing wells for Deluxe Mobile Home Park will be abandoned once the new community well is placed in service.

The Deluxe Mobile Home Park has been granted water rights, subject to proof of beneficial use, for its existing wells, in the total amount not to exceed 4.48 AF (1.46 Mgal) per year (through permitted Application 77602). A secondary application (79064) has been filed to modify the point of diversion to the community well (the location of the well has not yet been established). The current water rights are listed in the table below (Table 1).

**Table 1 – Water Rights**

<b>Application No.</b>	<b>Well No. &amp; Name</b>	<b>Rate of Diversion</b>	<b>Annual Use</b>
<b>77602</b>	<b>Existing well</b>	<b>0.05 c.f.s.</b>	<b>4.48 AF (1.46 Mgal)</b>
<b>79064</b>	<b>Community well</b>	<b>(transfer from 77602)</b>	<b>(transfer from 77602)</b>

Water is pumped and treated with chlorine prior to entering the distribution system. Water is then distributed to the tenants through 1-1/2-inch PVC water mains.

The Deluxe Mobile Home Park requires, at a minimum, a Grade 1 water treatment operator. Currently, water management and operations are contracted out to SPB Utility Services, Inc. of Reno, Nevada. SPB Utility Services, Inc. is a technical support company specializing in water and wastewater plant consultation, management and operations, including the endorsement to install and repair backflow prevention assemblies.

The plant operator is required to perform monthly, quarterly, and yearly monitoring and testing of water quality. Deluxe Mobile Home Park does not have any outstanding water quality issues. Although water quality testing is compliant, Deluxe Mobile Home Park is experiencing higher than normal levels of arsenic and uranium.

The last sanitary survey performed by the Nevada Department of Environmental Protection (NDEP) was completed on August 28, 2008, and showed 19 deficiencies were found with the system. These deficiencies were:

1. Consumer Confidence Report. The system is not issuing an annual Consumer Confidence Report (2000 to 2008) to the tenants and/or sending proper certification to the BSDW.
2. Significant Noncompliance System. System is in significant noncompliance with the Rules and Regulations adopted by NAC 445A.4525.
3. SRC WL Casing Physical Condition. W02 (middle well) casing is reportedly broken below the ground surface and would require extensive rehab to return to service. This well must be evaluated and properly abandoned if needed.
4. SRC WL Casing Physical Condition. W01 (west well) casing has been damaged and is reportedly broken 35' below grade at the pit less adapter. The well needs to be evaluated and properly abandoned if needed.
5. SRC WL Contaminant Sources in Capture Zone. There are new contaminant sources or unplugged abandoned wells in the well source water protection area. Please verify that W03 (east well) has/will have the necessary set backs.
6. SRC WL Cover Plate Problems. W02 (middle well) does not have a watertight cover plate or there are problems with the cover plate. Cover plate must be addressed immediately and a photograph provided (or other evidence) that this item has been corrected by October 10, 2008.
7. SRC WL Disinfection Required. W03 (east well) does not have a 50' sanitary seal and disinfection is required. Chlorine residual must be maintained at all times and at all locations in the distribution system. Provide documentation that the chlorinator adequately treats water delivered to the first customer on a daily basis.
8. SRC WL Sanitary Seal Norma. W03 (east well) is not equipped with a 50' sanitary seal.
9. Chlorine Residual Data. The system is not collecting chlorine residual levels with routine coliform samples or is not reporting the data to the BSDW.

10. Disinfection By-Products Samples and Reporting. The system is not collection the required disinfection by-product samples by an approved plan and/or properly reporting the results to the BSDW. The system must address all monitoring violations noted in the report.
11. IOC Samples and Reporting. The system is not collecting the required IOC samples and/or is not properly reporting the results to the BSDW. The system must address all monitoring violations noted in the report.
12. Lead and Copper Samples and Reporting. The system is not collecting the required lead and copper samples by an approved plan and/or properly reporting the results to the BSDW. The system must address all monitoring violations noted in the report. Monitoring must be completed during the summer months, ending September 30<sup>th</sup>.
13. Public Notice Noncompliance. The system is not performing required public notification and/or is not properly submitting copies of public notices to the BSDW. Public notification for violations must be completed within 12 months of the violation (generally covered in the CCR). Public notifications for all violations of the monitoring/reporting requirements listed in the report must be completed upon receipt of the report. A representative copy of each public notice must be provided to the BSDW within 10 days of issuance.
14. Radionuclide Samples and Reporting. The system is not collecting the required samples and/or properly reporting the results to the BSDW. The system must address all monitoring violations noted in the report.
15. Secondary Chemical Improper Collection. The system is not collecting secondary chemical samples at the approved sampling point. State secondary monitoring must be completed for W03 as per the monitoring schedule attached to the report.
16. SOC or VOC Sampling. The system is not properly collecting required VOC or SOC samples and/or properly reporting the results to the BSDW. The system must address all monitoring violations noted in the report. W03 initial monitoring has not been completed.
17. Cross Connection Control Plan. The system does not have or has not implemented a current written cross-connection control program. Prepare and submit to the BSDW for review.
18. Emergency Response and Recovery Plan. The system does not have a current emergency response plan that addresses source, production, storage, and distribution. Prepare and submit to the BSDW for review.
19. Operation and Maintenance Plan. The system does not have a current written operation and maintenance plan. Prepare and submit to the BSDW for review.

These deficiencies have either been addressed or will no longer be issues when the new community well is placed in service.

Deluxe Mobile Home Park does not currently meter individual spaces for water use. A flat rate monthly charge is assessed for all mobile home spaces; this rate includes water, garbage, and sewer. Deluxe Mobile Home Park does bill individual spaces for electricity use, as allowed by

Nevada statutes. Each space contracts individually with gas and cable providers and is responsible for payment to each provider.

Wastewater collected from the service area is collected and processed on-site. There are no plans for reusing affluent at this time.

Current mobile home space rents were established in 2005. Rates are reviewed when necessary and are adjusted accordingly. Due to financial limitations, space rates have not been increased at Deluxe Mobile Home Park since 2007.

## **Plan Provisions**

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, July 1, 2015.

The Deluxe Mobile Home Park will appoint, if economically feasible, a staff member to oversee the conservation efforts and this staff member will be responsible for implementation of conservation programs, monitoring of water use, and will review /revise the conservation plan when needed.

In an effort to promote voluntary conservation and aid in Nevada's future, the Deluxe Mobile Home Park will enact the voluntary conservation measures found in the *Conservation Measures* section. When more stringent measures are needed, the Deluxe Mobile Home Park will enact the measures found in the *Contingency Measures* section. All measures can be found in Appendix A.

As required by NRS 540.141, the water conservation plan must include the following provisions:

- a. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measures
- g. Conservation Estimates

Each provision is discussed below.

### **Public Education**

Public education is a key for cooperation with conservation efforts, so funding for public education is crucial. The Deluxe Mobile Home Park recognizes this and will establish a

conservation education program and corresponding budget, if economically feasible.

It is the goal of the Deluxe Mobile Home Park to increase public awareness to conserve water, encourage reduction in lawn sizes, encourage the use of climate-appropriate plants, encourage the use of drip irrigation, and encourage conscious decisions for water use.

The conservation education program includes education materials such as bill inserts, pamphlets, flyers, and posters. New tenants can be provided these materials when service is established, while existing tenants can receive these materials periodically. Educational pamphlets will be provided to all tenants upon request and should include an explanation of all costs involved in supplying drinking water and demonstrate how the water conservation practices will provide water users with long-term savings. Education materials should also encourage reduction of lawn sizes, use of drip irrigation, use of climate-appropriate plants, and conservation tips and techniques (see Appendix B).

### **Conservation Measures**

In an effort to promote conservation and voluntarily conserve water, the Deluxe Mobile Home Park is adopting water-use regulations to promote water conservation during non-emergency situations. These regulations include the following non-essential water use:

- 1) Use of water through any connection when the Deluxe Mobile Home Park has notified the tenant in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the tenant has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
- 3) Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for more than minimal landscaping in connection with any new construction.
- 6) Use of water for outside plants, lawn, landscape, and turf areas with even numbered addresses watering on even days and odd numbered addresses watering on odd days.
- 7) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 8) Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 9) Use of water for the filling or refilling of swimming pools.

In the event these conservation measures are insufficient to control the water shortage, the

Deluxe Mobile Home Park may wish to implement the mandatory measures discussed in the *Contingency Plan* section below.

The Deluxe Mobile Home Park also promotes the development of water conserving principles into the planning, development, and management of new landscape projects. Tenants are encouraged to consult with the local nursery or perform an internet search on the availability of water conservation plants and how to renovate existing landscapes. Tenants are also encouraged to evaluate irrigation management systems using metering, timing, and water sensing devices.

At present, it is not viable for Deluxe Mobile Home Park to offer financial incentives for water conservation to individual tenants.

## **Water Management**

Deluxe Mobile Home Park monitors and records water usage at all well sites. The system is designed such that water levels in the hydro pneumatic tanks are adjusted automatically when the tank's pressure reaches a particular set-point.

Currently there are no inter-ties with other water systems. However, there are plans for a community well to be shared with the two other adjacent mobile home parks, as discussed earlier.

Deluxe Mobile Home Park does not monitor unaccounted for water losses because individual spaces are not metered and there is no comparison to be made between production and space usage. There are no plans to meter individual spaces.

Deluxe Mobile Home Park does not have a formal leak detection program. When leaks are discovered, they are repaired immediately.

Deluxe Mobile Home Park does not have a formal well head protection program. However, wells are maintained in a secured enclosed housing unit.

Deluxe Mobile Home Park does not have a system for reusing of effluent. Effluent is handled on site.

A capital improvement plan is not in place. Water facilities are replaced when necessary.

Churchill County has adopted a Plumbing Water Conservation Ordinance which applies to structures which are renovated as well as all new construction. This ordinance is furnished to local suppliers and contractors. The Churchill County Building Department checks new construction, renovation, and expansions within the Churchill County to ensure compliance with this ordinance.

## **Contingency Plan**

The objective of the contingency plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions in order to ensure an adequate supply of water to meet essential needs.

The Deluxe Mobile Home Park plans for drought response would be three (3) stages of drought response: (1) warning stage, (2) alert stage, and (3) emergency stage. The stages are described as follows:

In Stage 1, the warning stage, the Deluxe Mobile Home Park would increase monitoring of its water supplies and would begin creating public awareness of the water supply situation and the need to conserve. Conservation measures at this stage would be voluntary. Retrofit kits (low-flow faucet aerators, low-flow showerheads, leak detection tablets, and replacement flapper valves) can be made available, or at cost, and can be actively distributed, if needed.

In Stage 2, the alert stage, the Deluxe Mobile Home Park would call for wide-based community support to achieve conservation, implement water use restrictions, and impose penalties for ignoring the restrictions. Conservation measures at this stage would be mandatory and violations would incur fines.

In Stage 3, the emergency stage, Deluxe Mobile Home Park would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, and could impose fees for water usage. Media relations would be activated in order to inform the tenants and monetary assistance may need to be secured in an effort to mitigate the effects of the drought (e.g. federal funding assistance). Conservation measures at this stage would be mandatory and violations would incur fines, and tenants could pay additional fees for water usage.

When a drought is declared over, voluntary conservation measures (see *Conservation Measures* section) will be reinstated and water supplies would continue to be monitored.

## **Schedule**

All of the provisions listed will be in place after the conservation plan has been approved.

## **Evaluation Measurements**

Because individual spaces are not currently metered, it is impossible to determine the effectiveness of each plan element on an individual tenant basis. However, Deluxe Mobile Home Park can evaluate the effectiveness of each plan element from the perspective of the whole mobile home park. In that regard, as a plan element is activated (e.g. mailing literature or declaring a drought stage), production figures will be compared to same-month historical data to estimate the plan element's effectiveness. This information will be utilized as a basis for any future water conservation plan revision and plan elements.

If there is a decrease in production as a result of a particular measure/incentive, that measure/incentive can be expanded or improved upon, if possible. If it is discovered that a particular measure/incentive is ineffective, it will be discontinued and a new one can then be implemented to take its place.

In addition to changes resulting from audits, updates, and modifications to conservation measures/incentives there will be changes made to meet changing conditions (e.g. tenant growth and demand, changing use, new technologies, etc.).

## **Conservation Estimates**

While it is estimated that metering alone could be the major driver of conservation, by raising awareness of individual account use, Deluxe Mobile Home Park does not have the finances available for metering individual space meters at this time.

During the Stage 1 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 5 to 10 % reduction in water use.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 10 to 15 % reduction in water use.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 15 to 30 % reduction in water use.

The estimated water savings for various end-user efforts can be found in Appendix C.

## **Rate Analysis**

The charging of variable rates for the use of water has sometimes been shown to encourage conservation of water, but not in all systems. Oftentimes the end-user will continue to pay increasing block rates out of necessity for the water used. The use of variable water rates needs to be evaluated on a case-by-case basis.

At this time Deluxe Mobile Home Park does not have the funds necessary to meter individual spaces and cannot charge variable rates based upon usage. Deluxe Mobile Home Park will continue to monitor water pumpage and will re-visit this issue each time rates are reviewed. If so warranted, a change in rates will occur and this conservation plan will be updated to reflect the new rates.

## **Appendices**

**APPENDIX A**  
**CONSERVATION MEASURES**

## **Stage 1 – Warning Stage**

1. The Deluxe Mobile Home Park would increase monitoring of water supplies.
2. The Deluxe Mobile Home Park would begin creating public awareness of the water supply situation and the need to conserve.
3. The Deluxe Mobile Home Park would inform tenants of voluntary conservation measures (non-essential water uses, listed below).
4. The Deluxe Mobile Home Park would provide tenants with retrofit kits either at cost or free.

Non-essential water uses are:

- 1) Use of water through any connection when the Deluxe Mobile Home Park has notified the tenant in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the tenant has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.
- 3) Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for more than minimal landscaping in connection with any new construction.
- 6) Use of water for outside plants, lawn, landscape, and turf areas with even numbered addresses watering on even days and odd numbered addresses watering on odd days.
- 7) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 8) Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.
- 9) Use of water for the filling or refilling of swimming pools.

## **Stage 2 – Alert Stage**

1. The Deluxe Mobile Home Park set conservation goals and call for wide-based community support to achieve those goals.
2. The Deluxe Mobile Home Park would inform tenants of mandatory conservation measures (non-essential water uses, listed in Stage 1 are now mandatory).
3. The Deluxe Mobile Home Park would inform tenants of penalties if mandatory conservation measures are not observed (penalties are listed below).
4. The Deluxe Mobile Home Park would inform tenants of mandatory conservation water fees.
5. The Deluxe Mobile Home Park limit the use of fire hydrants to fire protection uses only.
6. The Deluxe Mobile Home Park would provide tenants with retrofit kits either at cost or free.

Penalties for violation of mandatory conservation measures are:

- 1<sup>st</sup> violation – written warning
- 2<sup>nd</sup> violation – \$25.00
- 3<sup>rd</sup> violation – \$50.00
- 4<sup>th</sup> violation and subsequent violations – \$100.00

Offenses for separate water use restriction violations will each start at the warning stage (1<sup>st</sup> violation) and the penalties for the offenses are in addition to the regular space rental charges.

Stage 2 water rates could include an additional monthly water usage fee of \$25.00, or as deemed necessary.

### **Stage 3 – Emergency Stage**

1. The Deluxe Mobile Home Park would declare a drought and water shortage emergency and use media relations to supplement efforts to keep tenants informed.
2. The Deluxe Mobile Home Park would inform tenants of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
3. The Deluxe Mobile Home Park would inform tenants of penalties if prohibited measures are not observed (penalties are listed below).
4. The Deluxe Mobile Home Park would provide tenants with retrofit kits either at cost or free.
5. The Deluxe Mobile Home Park would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

Penalties for violation of prohibited water use measures are:

1<sup>st</sup> violation – written warning.

2<sup>nd</sup> violation – \$100.00

3<sup>rd</sup> violation – take the necessary legal action to protect existing water sources.

Offenses for separate water use restriction violations will each start at the warning stage (1<sup>st</sup> violation) and the penalties for the offenses are in addition to the regular space rental charges.

Stage 3 water rates could include an additional monthly water usage fee of \$50.00, or as deemed necessary.

If any tenant seeks a variance from the provisions of Stage 3, then that tenant shall notify the Deluxe Mobile Home Park in writing, explaining in detail the reason for such a variation. The Deluxe Mobile Home Park shall respond to each request.

**APPENDIX B**  
**PUBLIC EDUCATION MATERIALS**

There are several publications available for use at U.S. EPA website for general distribution (currently located at <http://epa.gov/watersense/pubs/index.htm#ideas>). These publications include such topics as:

- Simple Steps to Save Water,
- Ideas for Residences,
- Ideas for Commercial,
- Using Water Wisely In the Home,
- Outdoor Water Use in the US,
- Toilet Flush Facts,
- Watering Can Be Efficient,
- Irrigation Timers for the Homeowner, and
- Water Efficient Landscaping,

These publications can be utilized until the Deluxe Mobile Home Park develops system-specific publications.

There are also numerous website that provide tips for conserving water. One of these is: <http://www.wateruseitwisely.com/100-ways-to-conserve/index.php>. Tenants can be directed to this website for tips to conserve water.

Specific tips for landscaping that can be provided to the tenants are listed below. During drought conditions outdoor watering restrictions may be imposed, and therefore some of the following tips will not apply.

## **Tips for Landscaping**

### Watering:

- Detect and repair all leaks in irrigation systems.
- Use properly treated wastewater for irrigation where available.
- Water the lawn or garden during the coolest part of the day (early morning is best). Do not water on windy days.
- Water trees and shrubs, which have deep root systems, longer and less frequently than shallow-rooted plants which require smaller amounts of water more often. Check with the local nursery for advice on the amount and frequency of watering needed in your area.
- Set sprinklers to water the lawn or garden only—not the street or sidewalk.
- Use soaker hoses and trickle irrigation systems.
- Install moisture sensors on sprinkler systems.

### Planting:

- Have your soil tested for nutrient content and add organic matter if needed. Good soil absorbs and retains water better.
- Minimize turf areas and use native grasses.
- Use native plants in your landscape—they require less care and water than ornamental varieties.
- Add compost or peat moss to soil to improve its water-holding capacity.

### Maintaining:

- Use mulch around shrubs and garden plants to reduce evaporation from the soil surface and cut down on weed growth.
- Remove thatch and aerate turf to encourage movement of water to the root zone.
- Raise your lawn mower cutting height to cut grass no shorter than three inches—longer grass blades encourages deeper roots, help shade soil, cut down on evaporation, and inhibit weed growth.
- Minimize or eliminate fertilizing which requires additional watering, and promotes new growth which will also need additional watering.

### Ornamental Water Features:

- Do not install or use ornamental water features unless they recycle the water. Use signs to indicate that water is recycled. Do not operate during a drought.

**APPENDIX C**  
**END-USER WATER SAVINGS**

Here are just a few of the end-user water savings that could be realized:

### **Leaky Faucets**

**Issue:** Leaky faucets that drip at the rate of one drip per second can waste more than 3,000 gallons of water each year.

**Fix:** If you're unsure whether you have a leak, read your water meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same, you probably have a leak.

### **Leaky Toilets**

**Issue:** A leaky toilet can waste about 200 gallons of water every day.

**Fix:** To tell if your toilet has a leak, place a drop of food coloring in the tank; if the color shows in the bowl without flushing, you have a leak.

### **Showering**

**Issue:** A full bath tub requires about 70 gallons of water, while taking a five-minute shower uses 10 to 25 gallons.

**Fix:** If you take a bath, stopper the drain immediately and adjust the temperature as you fill the tub.

### **Brushing Teeth Wisely**

**Issue:** The average bathroom faucet flows at a rate of two gallons per minute.

**Fix:** Turning off the tap while brushing your teeth in the morning and at bedtime can save up to 8 gallons of water per day, which equals 240 gallons a month!

### **Watering Wisely**

**Issue:** The typical single-family suburban household uses at least 30 percent of their water outdoors for irrigation. Some experts estimate that more than 50 percent of landscape water use goes to waste due to evaporation or runoff caused by overwatering.

**Fix:** Drip irrigation systems use between 20 to 50 percent less water than conventional in-ground sprinkler systems. They are also much more efficient than conventional sprinklers because no water is lost to wind, runoff, and evaporation. If the in-ground system uses 100,000 gallons annually, you could potentially save more than 200,000 gallons over the lifetime of a drip irrigation system should you choose to install it. That adds up to savings of at least \$1,150!

### **Washing Wisely**

**Issue:** The average washing machine uses about 41 gallons of water per load.

**Fix:** High-efficiency washing machines use less than 28 gallons of water per load. To achieve even greater savings, wash only full loads of laundry or use the appropriate load size selection on the washing machine.

### **Flushing Wisely**

**Issue:** If your toilet is from 1992 or earlier, you probably have an inefficient model that uses at least 3.5 gallons per flush.

**Fix:** New and improved high-efficiency models use less than 1.3 gallons per flush—that's at least 60 percent less than their older, less efficient counterparts. Compared to a 3.5 gallons per flush toilet, a WaterSense labeled toilet could save a family of four more than \$90 annually on their water bill, and \$2,000 over the lifetime of the toilet.

### **Dish Washing Wisely**

**Issue:** Running dishwasher partial full and pre-rinsing dishes before loading the dishwasher.

**Fix:** Run the dishwasher only when it's full and use the rinse-and-hold dishwasher feature until you're ready to run a full load. Pre-rinsing dishes does not improve cleaning and skipping this step can save you as much as 20 gallons per load, or 6,500 gallons per year. New water-saver dishwashers use only about 4 gallons per wash.

Estimated water savings from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-1):

Type	Estimated Usage (gpcpd)	Conservation Usage (gpcpd)	Savings (gpcpd)	Savings (%)
Toilet	18.3	10.4	7.9	43 %
Clothes Washers	14.9	10.5	4.4	30 %
Showers	12.2	10.0	2.2	18 %
Faucets	10.3	10.0	.3	3 %
Leaks	6.6	1.5	5.1	77 %

Benchmarks from selected conservation measures from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-4):

Category	Measure	Reduction of End Use (% or gpcpd)
Universal metering	Connection metering	20 %
	Sub metering	20 – 40 %
Costing and pricing	10% increase in residential prices	2 – 4 %
	10% increase in non-residential prices	5 – 8 %
	Increasing-block rate	5 %
Information and education	Public education and behavior changes	2 – 5 %
End-use audits	General industrial water conservation	10 – 20 %
	Outdoor residential use	5 – 10 %
	Large landscape water audit	10 – 20 %
Retrofits	Toilet tank displacement devices (for toilets using > 3.5 gallons/flush)	2 – 3 gpcpd
	Toilet retrofit	8 – 14 gpcpd
	Showerhead retrofit (aerator)	4 gpcpd
	Faucet retrofit (aerator)	5 gpcpd
	Fixture leak repair	0.5 gpcpd
	Governmental building (indoors)	5 %
Pressure management	Pressure reduction, system	3 – 6 % of total production
	Pressure-reducing valves, residential	5 – 30%
Outdoor water use efficiency	Low water-use plants	7.5 %
	Lawn watering guides	15 – 20 %
	Large landscape management	10 – 25%
	Irrigation timer	10 gpcpd
Replacements and promotions	Toilet replacement, residential	16 – 20 gpcpd
	Toilet replacement, commercial	16 – 20 gpcpd
	Showerhead replacement	8.1 gpcpd
	Faucet replacement	6.4 gpcpd
	Clothes washers, residential	4 – 12 gpcpd
	Dishwashers, residential	1 gpcpd
	Hot water demand units	10 gpcpd
Water-use regulation	Landscape requirements for new developments	10 – 20 % in sector
	Greywater reuse, residential	20 – 30 gpcpd