

City of West Wendover

Water Conservation Plan

January 25, 2010

Prepared for:

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TABLE OF CONTENTS

Introduction	1
Statutory Requirements	2
System Description	3
Plan Provisions	5
Public Education	5
Conservation Measures	6
Water Management	8
Contingency Plan	9
Schedule	9
Evaluation Measurements	10
Conservation Estimates	10
Rate Analysis	10
Appendices	
A – Conservation Measures	12
B – Public Education Materials	18
C – End-User Water Savings	21

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 conservations 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 City of West Wendover 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 the City of West Wendover, as required by NRS 540.131.

This plan is available for inspection during normal business hours at the City of West Wendover Office at 1111 North Gene L. Jones Way, West Wendover, NV, as well as on the City of West Wendover website at www.westwendovercity.com.

The original Water Conservation Plan for City of West Wendover was developed in December 2000 and is currently being modified by this plan.

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, January 25, 2015.

System Description

The City of West Wendover is a publicly-owned residential community water system and has a current water operation permit, NV0000246. The City of West Wendover serves water to approximately 1,100 metered rate customers in its service area of the City of West Wendover, which is located in Elko County. The service area boundaries are the city limits of the City of West Wendover and covers approximately seven square miles. The service area's terrain is a combination of hills and flat areas.

The estimated population served in 2009 was roughly 5,140. The City of West Wendover estimates that its customer base will increase by 3% on a yearly basis expected through 2010. The State of Nevada, through its State Water Plan, estimates the population growth for Elko County through 2020 to be 1.85% annually.

The water supply is from six wells and one ground water spring which are located within the Goshute Valley Basin. These sources supply drinking water via transmission pipeline to a distribution system. There are a total of three storage tanks for the system. Each of these is identified in the tables below (Table 1 and Table 2).

Table 1 – Source of Supply

Source Name	Depth (feet)	Production (g.p.m.)
Shafter # 1	345	210
Shafter # 2	465	110
Shafter # 3	650	850
Shafter # 4	690	800
Shafter # 5	810	600
Shafter # 6	955	500
Johnson Spring	N/A	450
TOTAL	---	3,520

Table 2 – Storage Tanks

Storage Tank Name	Volume (gallons)
Three Mile Res.	1,500,000
Land Tank	1,500,000
Silver Smith Tank	1,000,000
TOTAL	4,000,000

The City of West Wendover has been granted water rights in the Goshute Valley totaling 5,059 AF (1,648.5 million gallons) annually. The combined duty for all well water rights shall not exceed 4,335 AF (1,412.6 million gallons) annually. The current water rights are listed in Table 3 below.

Table 3 – Water Rights

Application (Certificate)	Source Name	Max. Rate of Diversion	Annual Use
29433 (15159)	Shafter Well # 1	1.47 c.f.s.	105.511 Mgal (323.801 AF)
39110 (15160)	Shafter Well # 2	0.53 c.f.s.	48.401 Mgal (148.537 AF)
49060 (17190)	Shafter Well # 3	1.46 c.f.s.	733.50 AF (239.012 Mgal)
49422 (17191)	Shafter Well # 4	1.25 c.f.s.	497.21 AF (162.016 Mgal)
49595 (17192)	Shafter Well # 5	1.56 c.f.s.	276.74 AF (90.176 Mgal)
78451	Shafter Well # 6	2.00 c.f.s.	1,445 AF (470.855 Mgal)
49423	Test Well # 9	2.00 c.f.s.	1,445 AF (470.855 Mgal)
28527 (12918)	Johnson Spring	1.00 c.f.s.	235.906 Mgal (723.969 AF)

Water is pumped from the source, chlorinated, and then stored in three storage tanks until required by the system. Water is distributed to the customers through PVC mains ranging in size from 6-inch to 16-inches. The water system is controlled by a SCADA operating system.

The City of West Wendover requires, at a minimum, a Grade 3 Distribution for its operator. The plant operator is required to perform monthly and yearly monitoring and testing of water quality. The City of West Wendover does not have any outstanding water quality issues. The last sanitary survey performed by the Nevada Department of Environmental Protection (NDEP) was completed on October 15, 2008. Two deficiencies were found: (1) missing screens on outlets to some flush valves and some air valves and (2) small unsealed openings in the some of the well discharge heads. Both deficiencies were corrected immediately and documented to NDEP.

Currently, the City of West Wendover charges a flat rate for a base rate usage and a single quantity rate for all usage over the base rate. It does not have a tiered rate usage fee. Both residential and commercial customers are billed the same rates. In 2009, the base rate was \$18.00 for 8,000 gallons and the quantity rate was \$2.33 per 1,000 gallons over the base rate.

Wastewater collected from the service area is treated, stored, and reused by the golf course.

Current water rates were established on July 1, 2009. Water rates are reviewed every fiscal year and adjusted as necessary.

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, January 25, 2015.

The City of West Wendover will appoint 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 City of West Wendover will enact the voluntary conservation measures found in the *Conservation Measures* section. When more stringent measures are needed, the City of West Wendover 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 to successful conservation efforts. To some extent the relatively high cost of potable water in the City of West Wendover heightens public awareness of water use and indirectly promotes conservation. The City of West Wendover has provided public education in the past in conjunction with the completion of its drinking water source protection plan. Additional efforts are anticipated using resources available through the Nevada Rural Water Association. Currently it is planned to include this public education information in the water utility bills along with the annual consumer confidence report. Educational information will be provided to all customers upon request. Education materials will demonstrate how water

conservation practices can provide water users with long-term savings and promote a reduction of lawn sizes, use of drip irrigation, use of climate-appropriate plants, and conservation tips and techniques (see Appendix B). It is the goal of the City of West Wendover 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 City of West Wendover may participate in public outreach opportunities such as Earth Day, provide information at a variety of school programs, participate at workshops for plumbers/suppliers/builders, and may provide incentives for conservation efforts (e.g. plumbing retrofit rebates, water conservation landscaping rebates, etc.).

The City of West Wendover may also establish a water conservation advisory committee that could involve the public in the conservation process and provide feedback to the system concerning its efforts, thus fostering support for conservation in the community.

Conservation Measures

In an effort to promote conservation and voluntarily conserve water, the City of West Wendover has adopted a Water Conservation Code (Ord. 92-6, 4-21-1992) and a Water Regulations Code (Ord. 91-40, 1-7-1992). These codes promote water conservation during non-emergency situations and include the following non-essential water use provisions:

- 1) Non-beneficial use of water through any connection when the City of West Wendover has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer 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) All evaporating cooling devices, fountains, waterfalls, and other decorative water using facilities shall be equipped with water recycling or reuse systems approved by the director of the department of building for the City of West Wendover.
- 4) All mixing faucets must be designed to deliver a maximum of two and one-half gallons per minute, or must be equipped with flow control devices that deliver a maximum of two and one-half gallons per minute.
- 5) All water closets shall be designed to use a maximum of one and one-half gallons per flush.
- 6) All showerheads shall be of the type that delivers a maximum of two and one-half gallons per minute.
- 7) Commercial urinals shall be designed to use a maximum of one gallon per flush. No urinal shall be installed with a timed device to flush periodically irrespective of demand. Continuous flow urinals are prohibited.
- 8) Commercial lavatories must be equipped with either spring loaded faucets that close when not in use or faucets that are equipped with metering valves that close

automatically after delivering a maximum of one-fourth gallon. Multiple faucets activated from a single point are prohibited.

- 9) Promote the use of effluent water for the irrigation of commercial and recreational facilities.

In the event that more extreme conservation measures are warranted, the city may enact the following conservation measures applying to non-essential uses:

- 10) 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. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.
- 11) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 12) Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
- 13) Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
- 14) Use of water for more than minimal landscaping in connection with any new construction.
- 15) Use of water for outside plants, lawn, landscape, and turf areas with even numbered addresses watering on even numbered days and odd numbered addresses watering on odd numbered days, except that this provision shall not apply to commercial nurseries, golf courses and other water-dependent industries. Watering of plants, lawn, landscape, and turf areas are prohibited between the hours of 10 a.m. and 6 p.m.
- 16) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 17) 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.
- 18) Use of water for the filling or refilling of swimming pools.
- 19) Service of water by any restaurant except upon the request of the patron.

In the event these conservation measures are insufficient to control the water shortage, the City of West Wendover may wish to implement the mandatory measures discussed in the ***Contingency Plan*** section below.

The City of West Wendover also promotes the development of water conserving principles into the planning, development, and management of new landscape projects such as public parks, building grounds, and golf course. Customers 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. Customers are also encouraged to evaluate irrigation management systems using metering, timing, and water sensing devices.

At the present time the City of West Wendover does not offer incentives to promote water conservation. However, in the future, the City of West Wendover may consider implementing a tiered or multiple water rate structure for residential customers to reward low water consumers.

Water Management

The City of West Wendover monitors and records water levels at all well and tank sites using a SCADA system. Adjustments for controlling adequate water levels are computer controlled and are enacted at pre-determined levels.

While working relationships with other local water purveyors is desired in order to ensure adequate water supplies are available, there are no other local water purveyors to develop inter-ties with as the City of West Wendover is an isolated system.

The City of West Wendover does not formally monitor unaccounted for water losses as it does not meter water from fire hydrants. It does periodically monitor production and sales and will investigate if these figures are significantly different from historical figures. Likewise, the City of West Wendover does not have a formal leak detection program. All leaks are repaired immediately, with staff on-call 24-hours per day.

The City of West Wendover has a formal well head protection program and is currently participating in a basin-wide hydrologic study in the Goshute Valley. The goal of the study is to develop a water management plan that balances the needs of the various water users in the Goshute Valley while preserving the sustainability of the aquifer.

The City of West Wendover system is only twenty years old and has few problems; however leaks are repaired immediately to minimize water waste. The public works department routinely inspects all residential and commercial meters and upgrades or replaces defective or outdated meters as needed. Other system components such as tanks and pressure reducing valves are routinely inspected and maintained. Major water system upgrades are included in the City of West Wendover's short- and long-term capital facilities plan and are budgeted accordingly.

A replacement residential metering program has been implemented, requiring all water meters to be replaced with new radio-read meters. All meters are expected to be replaced by the end of 2012.

As noted previously, the City of West Wendover has enacted a water conservation ordinance which applies to structures that are renovated as well as all new construction. This ordinance is furnished to local suppliers and contractors. The city building department inspects new construction, renovation, and expansions within the city limit to ensure compliance with this ordinance.

The City of West Wendover does have a system in place for reusing of effluent. Effluent is treated, stored, and reused by the golf course. Currently, the golf course uses 100% of the effluent available.

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 City of West Wendover 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 describes as follows:

In Stage 1, the warning stage, the City of West Wendover 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 tables, 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 City of West Wendover would call for wide-based community support to achieve conservation, limit the use of fire hydrants to fire protection uses (by requiring effluent for construction and dust control purposes), 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, the City of West Wendover would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, implement allocation of water (rationing), and impose higher fees for water usage. Media relations would be activated in order to inform the customers 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, rationing would be imposed, violations would incur fines, and over-use would be penalized by higher rates.

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 are currently in place and are actively working to achieve results.

Evaluation Measurements

An audit comparing water production with metered amounts will be performed prior to the implementation of measures/incentives. Additional audits will then be done every year thereafter. Results from the initial audit will be compared with those of the subsequent annual audits in order to determine the effectiveness of the measures/incentives.

Usage amounts measured will include summer use, average use per connection, and per capita use. If there is a decrease in usage 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. customer growth and demand, changing use, new technologies, etc.). This information will be utilized as a basis for any future water conservation plan revision and plan elements.

Conservation Estimates

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, or 24 gpcpd.

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, or 40 gpcpd.

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, or 70 gpcpd.

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 the City of West Wendover does not anticipate any further water conservation savings due to a change in rate structure. The City of West Wendover will continue to monitor the water usage 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 City of West Wendover would increase monitoring of water supplies.
2. The City of West Wendover would begin creating public awareness of the water supply situation and the need to conserve.
3. The City of West Wendover would inform customers of voluntary conservation measures (non-essential water uses, listed below).
4. The City of West Wendover would provide customers with retrofit kits either at cost or free.

Non-essential water uses governed by city ordinance are:

- 1) Non-beneficial use of water through any connection when the City of West Wendover has notified the customer in writing to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer 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) All evaporating cooling devices, fountains, waterfalls, and other decorative water using facilities shall be equipped with water recycling or reuse systems approved by the director of the department of building for the City of West Wendover.
- 4) All mixing faucets must be designed to deliver a maximum of two and one-half gallons per minute, or must be equipped with flow control devices that deliver a maximum of two and one-half gallons per minute.
- 5) All water closets shall be designed to use a maximum of one and one-half gallons per flush.
- 6) All showerheads shall be of the type that delivers a maximum of two and one-half gallons per minute.
- 7) Commercial urinals shall be designed to use a maximum of one gallon per flush. No urinal shall be installed with a timed device to flush periodically irrespective of demand. Continuous flow urinals are prohibited.
- 8) Commercial lavatories must be equipped with either spring loaded faucets that close when not in use or faucets that are equipped with metering valves that close automatically after delivering a maximum of one-fourth gallon. Multiple faucets activated from a single point are prohibited.
- 9) Promote the use of effluent water for the irrigation of commercial and recreational facilities.

In the event that more extreme conservation measures are warranted, the city may enact the following conservation measures applying to non-essential uses:

- 10) 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. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.

- 11) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 12) Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.
- 13) Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.
- 14) Use of water for more than minimal landscaping in connection with any new construction.
- 15) Use of water for outside plants, lawn, landscape, and turf areas with even numbered addresses watering on even numbered days and odd numbered addresses watering on odd numbered days, except that this provision shall not apply to commercial nurseries, golf courses and other water-dependent industries. Watering of plants, lawn, landscape, and turf areas are prohibited between the hours of 10 a.m. and 6 p.m.
- 16) Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.
- 17) 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.
- 18) Use of water for the filling or refilling of swimming pools.
- 19) Service of water by any restaurant except upon the request of the patron.

Stage 2 – Alert Stage

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

The City of West Wendover may enforce penalties for violation of mandatory conservation measures as deemed necessary by the governing board. Examples of these penalties could be:

- 1st violation – written warning.
- 2nd violation – \$25.00
- 3rd violation – \$50.00
- 4th violation – turn-off of water services.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

The City of West Wendover may install a flow restrictor if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premises with a minimum of 7,500 gallons per month. The flow restrictor may be removed only by the City of West Wendover and only after a 30-day period has elapsed and only upon payment of the appropriate removal charge as deemed necessary by the governing board. Examples of these removal charges could be:

<u>Connection Size</u>	<u>Removal Charge</u>
5/8-inch to 1-inch	\$25.00
1-1/2-inch to 2-inch	\$50.00
3-inch and larger	Actual Cost

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

Stage 2 water rates would be 1.5 times the normal quantity rate, or as deemed necessary by the governing board.

Stage 3 – Emergency Stage

1. The City of West Wendover would declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. The City of West Wendover would set rationing benchmarks for each customer class.
3. The City of West Wendover would inform customers of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
4. The City of West Wendover would inform customers of penalties if prohibited measures are not observed (penalties are listed below).
5. The City of West Wendover would inform customers of rationing water fees.
6. The City of West Wendover would limit the use of fire hydrants to fire protection uses only.
7. The City of West Wendover would provide customers with retrofit kits either at cost or free.
8. The City of West Wendover would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

Rationing benchmark is set at 170 gpcpd (based on 490 gpd/ERC and an ERC to population conversion factor of 2 to account for the transient gaming population).

The City of West Wendover may enforce penalties for violation of prohibited water use measures, as deemed necessary by the governing board. Examples of these penalties could be:

- 1st violation – written warning.
- 2nd violation – \$200.00
- 3rd violation – turn-off of water services.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

The City of West Wendover may install a flow restrictor if the customer is non-responsive after the 1st violation. The flow restrictor shall not restrict water delivery by greater than 50% of normal flow and shall provide the premise with a minimum of 7,500 gallons per month. The flow restrictor may be removed only by the City of West Wendover, only after a 30-day period has elapsed and only upon payment of the appropriate removal charge as deemed necessary by the governing board. Examples of these removal charges could be:

<u>Connection Size</u>	<u>Removal Charge</u>
5/8-inch to 1-inch	\$25.00
1-1/2-inch to 2-inch	\$50.00
3-inch and larger	Actual Cost

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

If any customer seeks a variance from the provisions of Stage 3, then that customer shall notify the City of West Wendover in writing, explaining in detail the reason for such a variation. The City of West Wendover shall respond to each request.

Stage 3 water rates would be 2 times the normal quantity rate, or as deemed necessary by the governing board.

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 City of West Wendover 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>. Customers can be directed to this website for tips to conserve water.

Specific tips for landscaping that can be provided to the customers 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