

## Sierra Estates General Improvement District Water System

### Water Conservation Plan

#### Background / System Information

The **Sierra Estates GID (SEGID)** public water system (PWS NV0000030) serves customers within north Douglas County, Nevada. The total service area is approximately one square mile. The estimated population served (in ~~2007~~ 2012) is ~~463~~ 150. All residential customers are metered. Meters are installed on new residential services. There are no commercial services nor can there be any commercial services. Residential customers are billed on a **base plus increasing block** rate basis.

The system is located in Jacks Valley on Shawnee Dr and Green Acres Dr exclusively with a total of 70 possible customers. There are currently 67 active customers. Each customer lives on a one acre parcel. Water is supplied from one drilled well using a submersible pump. Above-ground storage consists of a 60,000 gallon water tank. Full-time disinfection **has not been necessary and is not** practiced. Wastewater collected from the area is managed through individual septic systems. There is no reclaimed water system within the Sierra Estates GID service area.

This is the ~~first~~ **second** Conservation Plan for the system. The plan is to be reviewed at five year intervals, with modifications to meet changing system conditions.

The Conservation plan is to be reviewed in the following years:

~~2013~~, 2018, 2023, 2028, 2033, 2038 etc.

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### Plan Elements

This plan describes the drinking water conservation and drought management efforts in the Sierra Estates GID, along with implementation schedules. The plan components conform to Nevada regulations as outlined by the Nevada Department of Conservation and Natural Resource, Division of Water Resources. Plan elements address the following areas:

- Increase **Public Awareness** of the need to conserve water
- Encourage reduction in **Lawn sizes and use of arid and semiarid plants**
- Identify **Specific water conservation measures**
- Propose **Plan to identify and reduce leakage**
- Increase **Reuse of effluent** where applicable
- Provide a **Drought contingency plan Stage 1 thru Stage 4**
- **Implementation schedule**
- **Plan effectiveness metrics**  
For each conservation measure specified in the plan or joint plan, an estimate of the amount of water that will be conserved each year as a result of the adoption of the plan or joint plan, stated in terms of gallons per capita per day (gpcpd).
- **Variable pricing analysis**  
The feasibility of charging variable rates for the use of water to encourage the conservation of water.
- **Water savings in gallons/person/day**  
For each conservation measure specified in the plan or joint plan, an estimate of the amount of water that will be conserved each year as a result of the adoption of the plan or joint plan, stated in terms of gallons of water per person per day.
- **How will Rate structure impact on water conservation**  
How the rates that are proposed to be charged for the use of water in the plan or joint plan will maximize water conservation, including, without limitation, an estimate of the manner in which the rates will affect consumption of water (expressed in terms of gpcpd).
- **Incentives to encourage water conservation**
- **Incentives to retrofit plumbing fixtures**
- **Incentives for water conserving landscaping**

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### Public Awareness

The Sierra Estates GID efforts to enhance public awareness of the need to conserve water include the following:

~~Twice a year,~~ Educational literature and/or messages are placed in water bills. Educational materials include tips on Conservation landscaping, 5 basic ways to conserving water, 25 things you can do to prevent water waste and water leak loss calculators.

### Lawn sizes and use of arid and semiarid plants

The Sierra Estates GID encourages its customers to use water efficient landscaping. Sierra Estates GID makes literature available to our customers and directs our customers to the Truckee Meadows Water Authority web site for information on appropriate arid and semiarid plants.

### Specific water conservation measures

- Sierra Estates GID instituted a three tiered water rate structure in 2006.
- Sierra Estates GID has instituted a voluntary odd/even watering schedule. As time passes, SEGID will monitor water usage and, when necessary, start a mandatory summer odd/even watering schedule as well as implementing water conservation codes and ordinances.
- The Douglas County Building Department checks new construction, renovation, and expansions within Douglas County to insure compliance with the ordinance and the plumbing code which specifies low-flow fixtures.
- The Sierra Estates GID code includes a provision that water service can be shut off for wasting water. This is enforced by visual inspection for runoff, following-up on citizen reports, and review of use at metered services. Typically a verbal or written warning is issued, followed by a shut-off when cooperation is not forthcoming.
- A residential metering program has been implemented, requiring water meters to be installed on all new construction. These meters are read monthly to obtain usage information.

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- Incentives for the customers of Sierra Estates GID to retrofit plumbing fixtures are demonstrated through educational pamphlets, flyers and bill stuffers.
- All watering of lawns, landscaping and gardens is prohibited between the hours of 1:00 pm and 5:00 pm.

### **Plan to identify and reduce leakage**

- Currently we use our power bills to monitor for possible leakage within our system.
- Once our source water flow meter is replaced, we will compare the readings from the source water flow meter with the readings from our customers meters to determine possible leakage.
- If our customers monthly meter readings indicate unusual water usage for the month, we call the customer and ask them to inspect their property for possible leakage or water faucets which have not been shut off properly.
- It is our written policy to repair leaks in a timely manner. All large leaks are repaired ASAP. We must hire a contractor to repair the leak. Small leaks are also repaired ASAP.

### **Reuse of effluent**

Currently, there are no plans in place to reuse effluent within the service area as all residences are on individual septic systems.

### **Drought contingency plan**

Nevada is an arid state and Douglas County is continuing to grow and water requirements are increasing. The area is subject to drought cycles; therefore, it is necessary to have a drought contingency plan. The objective of our plan is to manage the available resources to insure continued supply of potable water during periods of drought. We monitor water levels at our Well Site. An emergency inter-tie with Douglas Countys' North County water system was completed in March 2009.

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A drought condition for Sierra Estates GID will be determined by the static water level of their one well. The normal static water level is 30 feet. The well motor and pump is at ~~225 to~~ 235 feet. When the static water level falls to 100 feet a drought condition will be declared. When the static water level falls to 150 feet a severe drought condition will be declared. In the event the well becomes unusable, the inter-tie with Douglas County will be opened and Douglas Countys' drought contingency plan will override Sierra Estates GID plan.

The following rules for use of Sierra Estates GID water will be implemented by sending a letter using the USPS. Depending on the severity of the drought conditions, any or all of these rules will be implemented.

1. No hard surfaces including sidewalks, driveways, parking areas, decks or patios may be washed or hosed down with water supplied through the Sierra Estates GID potable water system unless required by health and safety requirements.
2. No washing of vehicles with hoses is permitted with the Sierra Estates GID water supplied through the Sierra Estates GID potable water system, except with hoses equipped with an automatic shut off device.
3. Water used for watering vegetation, including lawns, landscaping, and gardens is limited as follows:
  - a. Residences with even numbered addresses: Monday, Wednesday, & Saturday;
  - b. Residences with odd numbered addresses: Tuesday, Thursday & Sunday;
4. During a severe drought, no use of water for decorative purpose is permitted.
5. During a severe drought, water used for watering vegetation, including lawns, landscaping and gardens is limited as follows:
  - a. No watering from December through February;
  - b. Watering will only be allowed one day per week during March, April & May.
  - c. Watering will be allowed two days per week from June 1<sup>st</sup> through August 15<sup>th</sup>:
    1. Residences with even numbered addresses: Wednesday & Saturday;
    2. Residences with odd numbered addresses: Tuesday & Sunday;

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- d. Water will be allowed one day per week August 16<sup>th</sup> through September;
6. During a severe drought, the planting or installing of new lawns is prohibited from July through September.

### Implementation schedule

All of the plan elements listed are currently in place or will be in place by June 30, 2009. The plan is to be reviewed every five years, and updated as system needs change.

67 or 100% of residential services are now metered. Residential meters in place are now being read monthly. SEGID has 3 more lots which are not connected to the districts water system. Complete build out depends solely on the property owners who own those 3 lots. It may be years before these 3 final hook ups are completed.

### Plan effectiveness metrics

Historical well production will be compared to estimated population each year to determine the gallons per capita per day (gpcpd) consumption. For 2007, the gross production divided by the estimated population (163) ~~is~~ was 295 gpcpd. The gpcpd dropped steadily thru 2011 when it reached a low of 258 pgcpd. In 2012 our gpcpd jumped to 293\* while our population dropped to 150 people served. This population drop was mostly due to children growing up and leaving home. If the population had stayed at 163, our gpcpd would have been 270. It appears our increased water rates and tiered billing structure helped in lowering our water consumption. When customers with their own private wells stop using them, our pgcpd increases. We expect our pgcpd to level out or drop in 2013, but we will keep a fourth pricing tier in mind for a further conservation measure. ~~Due to this gpcpd, we will begin researching options for plan revisions to include additional conservation measures including adding additional tiers with significantly increased rates starting at 60,000 gallons of usage.~~ At the present time, well production provides a gross gpcpd estimate. The same calculation applied to winter sales provides an estimate of non-irrigation household use.

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When a plan element is activated, such as mailing literature or declaring a drought stage, production in terms of gpcpd will be compared to same month historical data to estimate effectiveness. It is estimated that metering alone will be the major driver of conservation by raising awareness of individual account use. Metering alone, without a rate structure change, but with the public education elements, can be expected to provide a 5 percent reduction in water use, or 14 gpcpd.

### Variable pricing analysis

The present residential water rate structure is an **increasing block** rate. Rates are scheduled to be reviewed annually and adjusted to meet budgeted costs. Each time rates are altered, the water usage patterns will be analyzed to determine price sensitivity. The amount of water conserved as a result of actual price changes, in terms of gpcpd, will be used in future analysis. If necessary, an additional rate block will be implemented to balance lost operating income due to water conservation by our customers with operating expenses.

Our current rate structure is as follows:

Water service availability charge: \$162.00 Annual or monthly \$13.50  
 Water operator charge: \$240.00 Annual or monthly \$20.00

Water usage rates **as of February 1, 2013:**

Base rate:	0 gallons	<del>\$12.88</del> <b>19.56</b>
	1000 to 8000	<del>\$0.69</del> <b>1.04</b> per 1000 gallons used
	8001 to 24000	<del>\$0.88</del> <b>1.33</b> per 1000 gallons used
	24001 plus	<del>\$1.24</del> <b>1.90</b> per 1000 gallons used

Our average monthly water bill for ~~fiscal~~ **calendar** year 2007 **and 2012** was

	<b>2007</b>	<b>2012</b>
Water service availability charge:	\$13.50	<b>\$13.50</b>
Water operator charge:	\$20.00	<b>\$20.00</b>
Average Monthly water usage:	<del>\$27.69</del> <b>34.69</b>	<b>\$47.47</b>
Average Monthly water bill:	<del>\$61.19</del> <b>68.19</b>	<b>\$80.97</b>

We have in place an automatic annual increase of 3% to cover inflation. ~~Additionally our rates increase 10% annually in October through 2011.~~ Rates are now being evaluated annually.

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### **Water savings in gallons/person/day**

The current water usage of Sierra Estates GID is 295 gpcpd, which is estimated to be above the national average. Metering alone, without a rate structure change, but with the public education elements can be expected to provide a 5 percent reduction in water use, or 14 gpcpd.

### **Rate structure impact on water conservation**

At this time, Sierra Estates GID does not anticipate any further water conservation in terms of gpcpd due to rate structure alterations. Sierra Estates GID will continue to monitor the gpcpd of its customers and will re-visit this issue at each rate modification.

### **Incentives to encourage water conservation**

There are no incentives in place or planned.

### **Incentives to retrofit plumbing fixtures**

There are no incentives in place or planned.

### **Incentives for water conserving landscaping**

There are no incentives in place or planned.

### **\*Note**

SEGID has no high density, multifamily housing which would drastically drop our gpcpd when compared to water systems with high density, multifamily housing. All of SEGID's customers live on 1 acre or more compared to having 4 to 5 houses per acre. Were SEGID to serve 3 or 4 houses per acre, SEGID's gpcpd would be 98 or 74, respectively, which are good gpcpd's.

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