



ORANGE WATER AND SEWER AUTHORITY

Quality Service Since 1977

MEMORANDUM

TO: Board of Directors
FROM: Ed Kerwin
DATE: October 17, 2007
SUBJECT: Recommended Declaration of Stage Two Water Shortage

Recommended Action

Staff recommends that the Board of Directors declare a Stage Two Water Shortage for the OWASA service area, effective October 19, 2007. Key reasons for this recommendation are:

- ✓ Reservoir levels and total water storage on-hand have continued to decline, as there has been no inflow to our reservoirs for more than two months. (Please see [Attachment #1.](#))
- ✓ The U.S. Drought Monitor rates the ongoing drought as “Exceptional,” and the long-term weather forecast indicates that drought conditions are expected to continue into next year.
- ✓ Since Stage One water use restrictions were declared on September 27, 2007, customer demands have not achieved the stated goal of a ten percent reduction below the pre-drought projection for October. (Please see [Attachment #2.](#)) Additional demand reduction is needed to extend the available supply in the coming months.
- ✓ Our total storage on-hand is now considerably less than it was at this same time in 2001, during the drought of record. By this date in 2002, heavy rainfalls were re-filling the reservoirs. As the Board previously discussed, our reservoir system is especially vulnerable to multi-year droughts.
- ✓ On October 15, 2007 Governor Easley strongly advised local governments to direct citizens “to stop using of water for any purpose that is not essential to public health and safety so communities can save their dwindling water supplies and avoid more stringent restrictions.”

Staff also recommends that the Stage Two Water Commodity Surcharges specified in our rate schedule be implemented effective November 1, 2007

For your consideration, [Attachment #3](#) is a draft resolution recommending the declaration of a Stage Two Water Shortage and implementation of Stage Two Water Commodity Surcharges. If the Board concurs, we will immediately request local proclamations of a Stage Two Water Shortage. We will also issue news release(s), prepare information for direct

mailing to our customers, publish notices in the local media, post information on our Website homepage, etc.

We recognize that our water and sewer commodity charge revenues will be affected by reductions in water use by our customers; however, we believe the decision to declare a Stage Two Water Shortage should be made regardless of the financial issues and implications for OWASA.

The extent to which our financial condition will be affected depends on the amount of demand reduction achieved by our customers, the duration of the drought, the additional revenue that may be generated by water commodity rate surcharges during Stage Two (and possibly more severe stages), and adjustments to our operating, maintenance and capital expenditures in response to the drought.

In the near future, staff will present the Board with an evaluation of those potential effects and options for adjusting operating, maintenance and capital expenses to mitigate any revenue effects.

The following information is provided in support of these recommendations.

Background Information

On August 23, 2007 the Board of Directors declared a Water Supply Advisory, alerting customers that additional water use restrictions might be needed if supply/demand conditions did not improve in the coming months. On September 27, 2007 the Board declared a Stage One Water Shortage in effect. The Mayors of Carrboro and Chapel Hill and the Chair of the Orange County Board of Commissioners subsequently issued proclamations implementing Stage One water use restrictions of the local water conservation ordinances. A summary of the general conservation ordinance requirements is provided in [Attachment #4](#).

Since that time, the drought has persisted, and the remaining supply available in Cane Creek Reservoir and University Lake has continued to decline. As of this writing, our reservoirs are at 51.7 percent of capacity, with approximately 1.7 billion gallons of supply remaining (not including the limited supply available in the Stone Quarry Reservoir). Assuming a withdrawal rate of about 8 million gallons per day (the budgeted pre-drought demand projection for November through January), and no rainfall or evaporation, this represents about seven months of storage remaining in Cane Creek Reservoir and University Lake.

The following table compares current remaining supply and customer demands with conditions on October 17 in 2001 and 2002:

	<u>Remaining Supply</u>	<u>30-Day Demand (MGD)</u>
October 17, 2007	51.7%	9.9
October 17, 2002	67.5%	7.9
October 17, 2001	71.5%	10.2

Our water supply management model, which is based on actual and simulated daily inflows for the past 81 years, indicates that the risk of critical reservoir drawdowns to 20 percent of capacity or less during the next 18 months is low (less than 2 percent), and the likelihood of the reservoirs refilling by next April is relatively high (greater than 90 percent). However, we are increasingly concerned that the ongoing drought conditions and corresponding reductions in inflow to our reservoirs may be more severe than reflected in the 81-year streamflow record. It is possible that our historically-based risk model may not adequately reflect more recently recognized uncertainties and hydrologic effects of global climate change.

Currently available forecasts for the southeastern United States anticipate a continuation but possible lessening of drought conditions during the coming months, but the National Oceanic & Atmospheric Administration recently reported that La Nina conditions appear to be re-emerging and may contribute to a drier than normal winter.

We believe it is prudent to take a precautionary approach in light of the exceptional drought conditions and extended weather outlook. For these reasons, staff recommends that the Board declare a Stage Two Water Shortage. Such action would be generally consistent with Governor Easley's request that local communities throughout North Carolina ban irrigation and other outdoor uses and non-essential use of water. Most of our neighboring communities have invoked strict conservation measures.

Stage Two Water Shortage Restrictions

The attached draft resolution lists the specific mandatory water use restrictions as provided for under Stage Two of the local water conservation ordinances. The key Stage Two measures that are more strict than Stage One are:

- ✓ All spray irrigation is prohibited.
- ✓ Car washing is prohibited except at car washes that recycle at least 50 percent of the water they use or where well water is used.

Stage Two Water Commodity Rate Surcharges

In addition to the restrictions described above, our schedule of rates, fees, and charges includes provisions for implementation of progressively steeper water commodity surcharges during different Water Shortage stages. The relation of these surcharges to OWASA's new block rate structure is summarized in [Attachment #5](#). Under Stage Two, the surcharges apply to individually-metered residential accounts as follows:

		Stage Two Surcharge Rate per 1,000 Gallons	
Use in Block 3	1.5 times normal Block 3 rate	\$8.295	(\$5.53 X 1.5)
Use in Block 4	2 times normal Block 4 rate	\$14.92	(\$7.46 X 2)
Use in Block 5	3 times normal Block 5 rate	\$39.15	(\$13.05 X 3)

The Board previously approved implementing Stage One surcharges effective November 1, 2007, and we have informed our customers and the media of that decision. While we recognize that Stage Two surcharges will affect more customers and result in even higher surcharges than Stage One, we recommend that the Stage Two surcharges be implemented effective November 1, 2007.

Surcharges for non-residential customers, as well as even higher surcharges for individually-metered residential accounts would go into effect if and when the Board declares a Stage Three Water Shortage.

Based on our water supply model, and the water demand reductions we expect under Stage Two restrictions, we would not normally expect to consider Stage Three measures before the end of the year. However, we will continue to closely monitor our remaining water supply, inflows, and customer demands and keep you informed of those conditions and the potential need for further action.

Conclusion

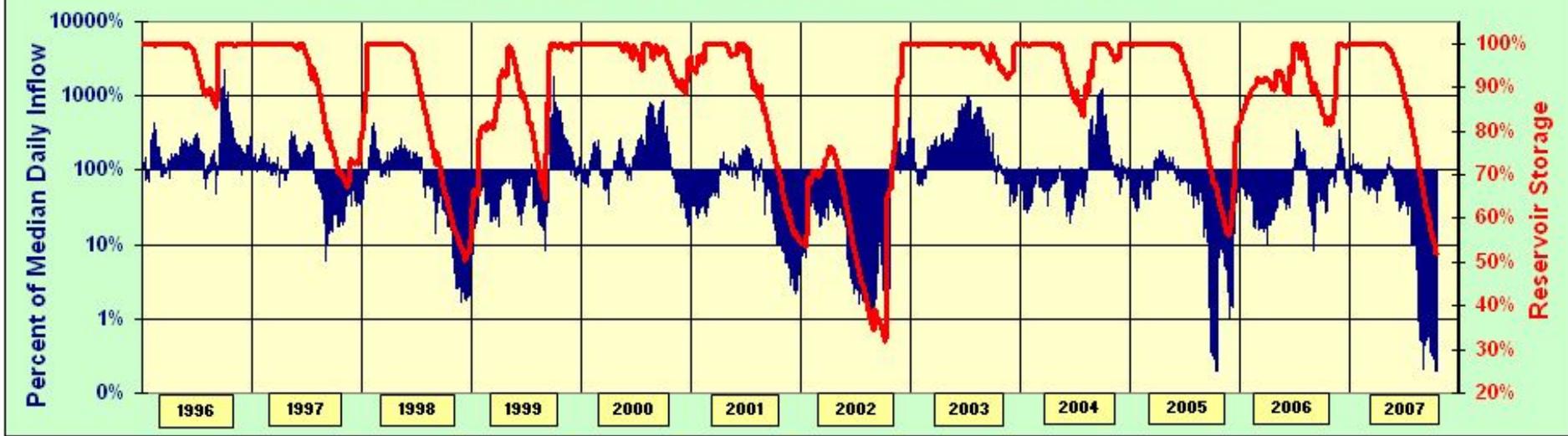
In view of the information and discussion presented above, staff recommends that the Board declare a Stage Two Water Shortage and implement the Stage Two water commodity surcharges effective November 1, 2007. If you concur, we will notify the Carrboro, Chapel Hill and Orange County governments; prepare and issue as soon as possible appropriate media releases, public notices, etc.; and, will mail each of our customers information that explains the need for conservation, the Stage Two restrictions, the water commodity surcharges, etc.



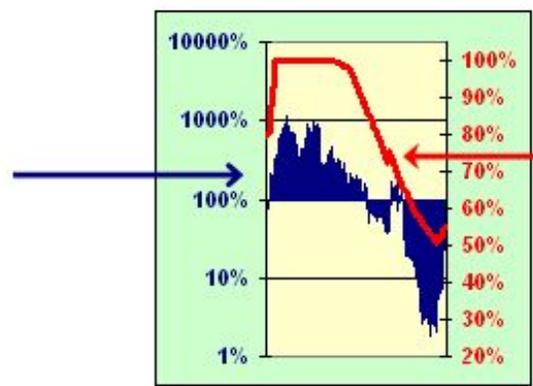
Ed Kerwin
Executive Director

Attachments

OWASA Reservoir Storage and Inflow, Jan 1, 1996 - Oct 16, 2007

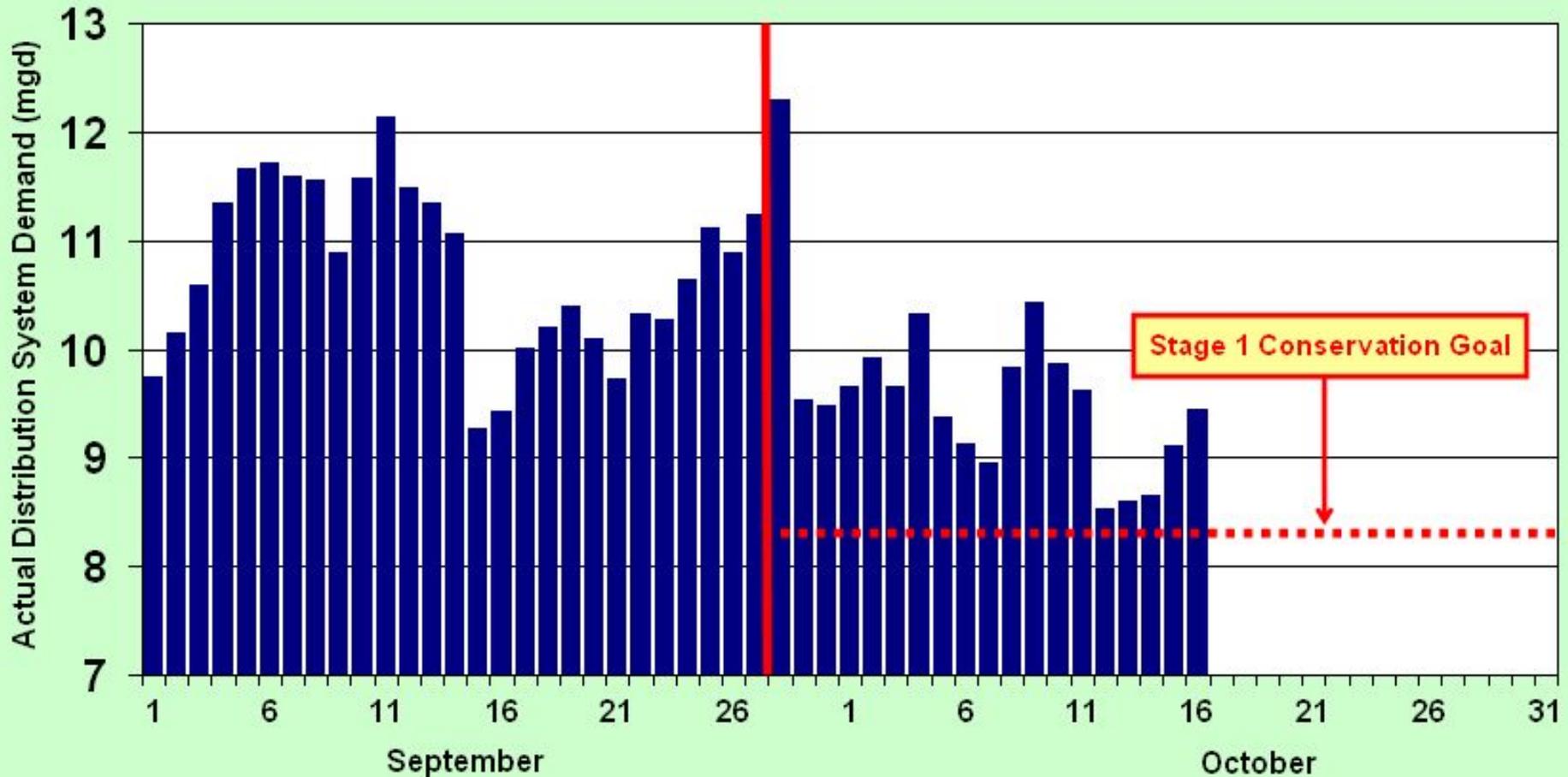


Total Reservoir Inflow (30-day median) as percent of 18-year daily median



Percent of Total Reservoir Storage

Daily Customer Demand September 1 - October 16, 2007



**DECLARATION OF STAGE TWO WATER SHORTAGE AND REQUEST
FOR INCREASED WATER CONSERVATION DUE TO ONGOING
EXCEPTIONAL DROUGHT CONDITIONS**

WHEREAS, on August 23, 2007 the OWASA Board of Directors issued a Water Supply Advisory, and on September 27, 2007 the Board declared a Stage One Water Shortage; and

WHEREAS, as a result of the ongoing exceptional drought, our reservoir levels and total water storage on-hand have continued to decline and there has been no inflow to our reservoirs for more than two months; and

WHEREAS, the U.S. Drought Monitor rates the ongoing drought as “Exceptional,” and the long-term weather forecast indicates that drought conditions are expected to continue into 2008; and

WHEREAS, the Cane Creek Reservoir and University Lake, which are the Carrboro-Chapel Hill-southeast Orange County community’s primary public water sources, were 51.7% full as of October 17, 2007, and recent demand has not yet achieved the Stage One Water Shortage goal of reducing demand to 8.2 million gallons per day or less; and

WHEREAS, on October 15, 2007 North Carolina Governor Mike Easley requested that local governments in the State take immediate action to achieve greater conservation due to the severe and continuing drought;

NOW THEREFORE, BE IT RESOLVED:

1. That the Board of Directors of Orange Water and Sewer Authority hereby determines that water supply and demand conditions warrant the declaration of a Stage Two Water Shortage under the local Water Conservation Ordinances applicable to OWASA customers.
2. That the Board of Directors hereby requests the Mayors of Carrboro and Chapel Hill, and the Chair of the Orange County Board of Commissioners to issue proclamations enacting the following Stage Two water use restrictions with the goal of reducing overall local water demand to a level of at least 15 percent below OWASA’s pre-drought demand projections for the coming months.
 - a. Water use by individually metered residential customer accounts and by individually metered single-family residential irrigation-only accounts shall be limited to no more than an average of 800 gallons per day during any monthly billing cycle beginning after the declaration of a Water Supply Shortage or Water Supply Emergency and ending while such restrictions are still in effect.
 - b. Spray irrigation with OWASA-supplied potable water shall not be permitted, except by persons regularly engaged in the sale of plants, who shall be allowed to irrigate their commercial stock in trade.

- c. Irrigation by underground, drip irrigation, micro spray, low precipitation bubblers, soaker hose systems with automatic shutoffs, or by hand held hoses or watering cans shall be limited to a maximum of one-half inch of water applied to plant material in any given week.
- d. No OWASA-supplied potable water shall be used to re-fill ornamental fountains, ponds, and like devices.
- e. No OWASA-supplied potable water shall be used for washing vehicles, except at commercial or institutional car washes in which at least 50 percent of the water has been recycled.
- f. No OWASA-supplied potable water shall be used for filling or re-filling empty swimming pools. OWASA-supplied potable water may be used to top off operating swimming pools.
- g. No OWASA-supplied potable water shall be used for the routine cleaning or washing of exterior building surfaces, decks, or paved areas, such as sidewalks, driveways, roadways, and parking lots. This restriction shall not apply to the pressure cleaning of exterior building surfaces or decks prior to painting or re-painting that is necessary to protect or maintain the physical integrity of the structure.
- h. No OWASA-supplied potable water may be used for fire department training or equipment testing unless required by State or Federal regulations.
- i. Restaurants and dining facilities shall serve water only on request of the customer.
- j. Hotels, motels, and other facilities providing sleeping accommodations shall change bed linens only upon request of the customer, or upon customer changeover, or every five days for long-term customers.
- k. The operation of dishwashers and clothes washers only when loaded to their maximum capacity, or at water level settings appropriate for the size of the load being washed, shall be strongly encouraged.
- l. The use of ultra-low flow toilets, tank dams, flow restrictors (aerators) and low-flow showerheads, where not otherwise required, shall be strongly encouraged; and additional indoor conservation practices – as well as devices – shall also be encouraged.
- m. Plumbing systems shall be properly maintained and repaired to prevent water leaks.
- n. Indoor water leaks on property or facilities of OWASA customers must be repaired within ten (10) days of discovery and notification by OWASA.

The protection of public health, safety, and welfare may, under special circumstances, require the use of limited amounts of OWASA-supplied potable water for such purposes as washing out garbage trucks, cleaning up hazardous or other unsanitary materials, etc. Such uses shall be permitted during declared Water Shortages or Emergencies, provided that other practical alternatives are not available and water is used in the least practical amount.

In addition, no person, party, or entity shall use, cause, waste, or permit to be wasted any OWASA -supplied potable water, in violation of the standards set out herein. Water waste is defined as the non-beneficial use of OWASA potable water. Non-beneficial uses include but are not restricted to:

- a. Landscape water applied in such a manner, rate and/or quantity that it overflows the landscaped area being watered and runs onto adjacent property or public right-of-way; or landscape water applied during periods of rainfall or when soil moisture is already adequate.
- b. The use of water for washing vehicles, equipment, or hard surfaces, such as parking lots, aprons, pads, driveways, or other surfaced areas, in such quantities to flow onto adjacent property or the public right-of-way.
- c. Water applied in sufficient quantity to cause ponding on impervious surfaces.
- d. Water lost through plumbing leaks that can be readily identified and corrected.

3. That the Board of Directors hereby expresses its appreciation to the Towns of Carrboro and Chapel Hill and Orange County for their assistance in implementing and enforcing provisions of the water use ordinance and in helping to inform the community of the need for conservation during the ongoing drought and throughout the year.

4. That the Board of Directors hereby expresses its appreciation to its customers for their conservation efforts during the ongoing drought and throughout the year.

Adopted this 18th day of October, 2007.

Randolph Kabrick, P.E.
Chair

ATTEST:

Braxton Foushee
Secretary

Year Round Conservation	Water Supply Advisory	Stage One Shortage <i>10% reduction goal</i>	Stage Two Shortage <i>15% reduction goal</i>	Stage Three Shortage <i>20% reduction goal</i>	Water Supply Emergency <i>20+% reduction goal</i>
<p>Spray Irrigation limited to 3 days/week, between 8 PM and 9 AM ~ All irrigation limited to 1 inch per week ~ Automatic controllers and moisture sensors required on all irrigation systems ~ Shut-off nozzles required on all hoses ~ Wasteful water use prohibited ~ Leaks must be repaired within 10 days ~ Use of reclaimed or harvested water strongly encouraged ~ Restaurants to serve water only on request ~ Hotels to change bed linens only on request ~ Dishwashers and clothes washers to be operated with full loads only ~ Use of water saving fixtures strongly encouraged</p>	<p>Public alert about potential shortage; notice that water use restrictions may be imposed in the near future ~ No mandatory water use restrictions other than year- round requirements already in place ~ Targeted conservation education and awareness campaign</p>	<p>Spray Irrigation limited to 1 day/week, between 8 PM and 9 AM ~ All irrigation limited to ½ inch per week ~ Irrigation by underground, drip irrigation, soaker hoses, or hand - held hoses or watering cans may occur at any time or frequency, but limited to ½ inch per week ~ No OWASA water to refill ornamental fountains, ponds and like devices ~ No OWASA water for routine cleaning of paved surfaces such as sidewalks and roadways. Restrictions do not apply to pressure cleaning of exterior building surfaces ~ Water use by residential customers limited to 1,000 gallons per day</p>	<p>No Spray Irrigation, except by persons regularly engaged in the sale of plants ~ Irrigation by underground, drip emitters, soaker hoses, or hand- held hoses or watering cans may occur at any time or frequency, but limited to ½ inch per week ~ No OWASA water to refill ornamental fountains, ponds, etc. ~ No vehicle washing, except at commercial or institutional car washes in which 50% of water has been recycled ~ No OWASA water for filling or refilling empty swimming pools. Operating swimming pools may be topped off. ~ No OWASA water for cleaning or washing exterior building surfaces or paved areas. Pressure washing of buildings prior to painting is allowed ~ Residential use limited to 800 gallons per day</p>	<p>No irrigation, except with hand-held hoses or watering cans, limited to 3 days per week, no more than ½ inch per week ~ No outdoor use, except for emergency fire suppression or other activities necessary to maintain public health, safety or welfare ~ No OWASA water to refill ornamental fountains, ponds, etc. ~ No washing of vehicles ~ No pressure cleaning of building exteriors ~ No OWASA water for flushing or pressure testing new lines unless water is recycled ~ No filling, refilling, or topping off operating swimming pools ~ Water for heating and cooling to be reduced to the maximum extent allowable ~ Residential use limited to 600 gallons per day</p>	<p>No OWASA-supplied potable water for any outdoor purposes other than emergency fire suppression or other activities necessary to maintain public health, safety, or welfare ~ Water for heating and cooling to be reduced to the maximum extent allowable ~ Water service may be discontinued or reduced to designated users or in designated portions of the OWASA service area in order to preserve the availability of water for essential public health and safety requirements, such as fire protection, hospitals, clinics, and other critical community needs</p>

Individually Metered Residential Accounts

Individually metered residential accounts will be billed under an increasing block rate structure designed to encourage efficient water use by applying increasing commodity charges (rate per thousand gallons) to incremental increases in water use.

	<u>Volume of Use (1,000s of Gallons)</u>	<u>Calculated Commodity Rate per 1,000 Gallons</u>
Block 1	0 to 2,999	\$1.98
Block 2	3,000 to 5,999	\$4.70
Block 3	6,000 to 10,999	\$5.53
Block 4	11,000 to 15,999	\$7.46
Block 5	All use 16,000 and up	\$13.05

Non-residential Accounts

To achieve demand reduction during peak water use periods, a seasonal conservation rate structure will be applied to non-residential accounts. A reduced commodity charge is in effect during lower demand months (October through April), and a higher commodity charge is in effect during high demand months (May through September).

Off-peak rate per 1,000 gallons (October through April)	\$3.08
Peak seasonal rate per 1,000 gallons (May through September)	\$5.85

Conservation Water Commodity Charges Under Mandatory Water Use Restrictions

Water commodity charges applicable to individually-metered residential accounts will be temporarily increased during periods of mandatory water use restrictions regardless of the time of year. These applicable surcharges are summarized in the following table.

**WATER COMMODITY SURCHARGES
APPLICABLE UNDER MANDATORY WATER USE RESTRICTIONS**

	Individually-Metered Residential Accounts						Non-Residential
Block:	Res. Block 1	Res. Block 2	Res. Block 3	Res. Block 4	Res. Block 5	Cutoff Block	
Use Level:	0 to 2,999	3,000 to 5,999	6,000 to 10,999	11,000 to 15,999	16,000 and up		All
Stage 1 Mandatory	No surcharge	No surcharge	No surcharge	1.5 times normal Block 4 rate	2 times normal Block 5 rate	>1,000 gallons per day	Non-Peak Period: No surcharge Peak Period: No surcharge
Stage 2 Mandatory	No surcharge	No surcharge	1.5 times normal Block 3 rate	2 times normal Block 4 rate	3 times normal Block 5 rate	>800 gallons per day	Non-Peak Period: No surcharge Peak Period: No surcharge
Stage 3 Mandatory and Emergency	No surcharge	1.25 times normal Block 2 rate	2 times normal Block 3 rate	3 times normal Block 4 rate	4 times normal Block 5 rate	>600 gallons per day	Non-Peak Period: 1.25 times peak seasonal rate Peak Period: 1.25 times peak seasonal rate