

### Presentation to Chapel Hill Town Council September 10, 2007

## Good News/Bad News

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Warning: "Additional measures may become necessary."

## Year-Round Requirements Spray irrigation only 3 days per week.

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  - > Odd addresses: Sun, Wed, Fri
    > Even addresses: Tues, Thurs, Sat

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- Only from 8:00 pm to 9:00 am.
- One-inch total per week.
- No water waste!

## **Stage 1 Water Shortage**

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### (if necessary in the coming months . . .)

## Stage 1 Water Shortage Spray imigation <u>only 1 day</u> per week.

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Stage 1 Water Shortage
Spray imigation <u>only 1 day</u> per week.

> Odd addresses: Thurs only

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One-half inch total per week.

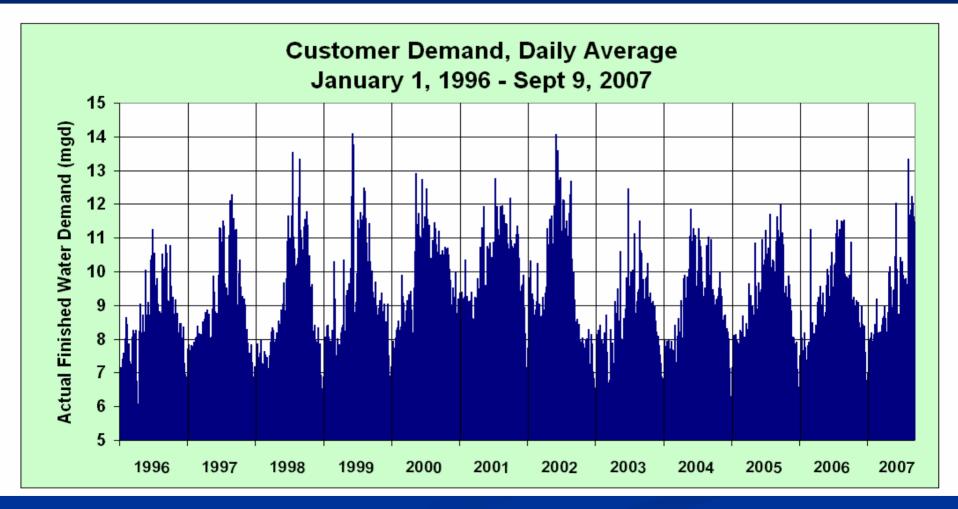
## **Stage 1 Water Shortage**

- Spray imigation <u>only 1 day</u> per week.
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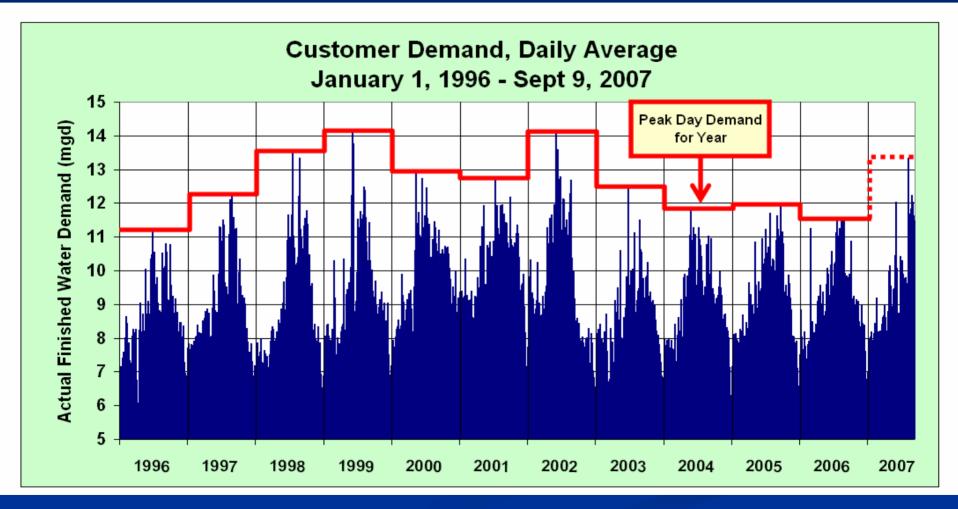
*One-half inch* total per week.
 1,000 gal/day residential limit

## Where Are We Now?

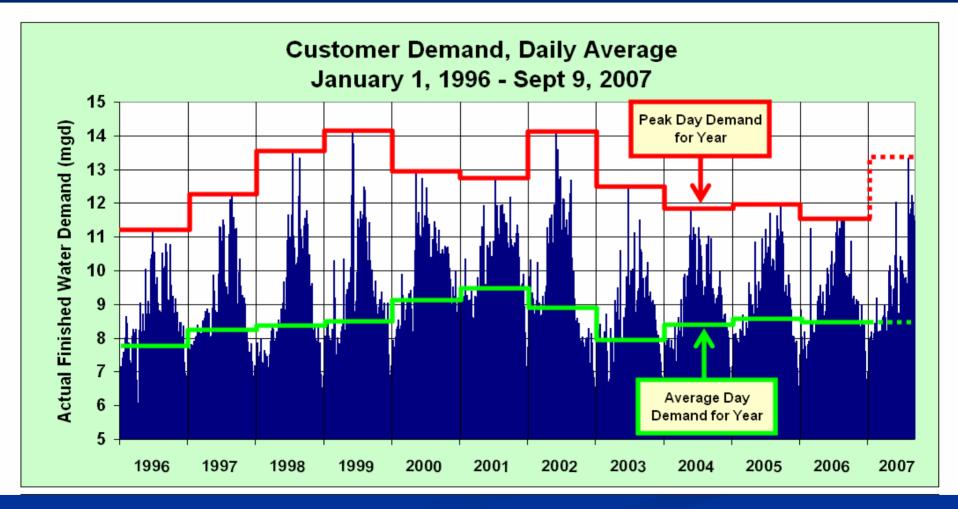
## **Daily Demand**



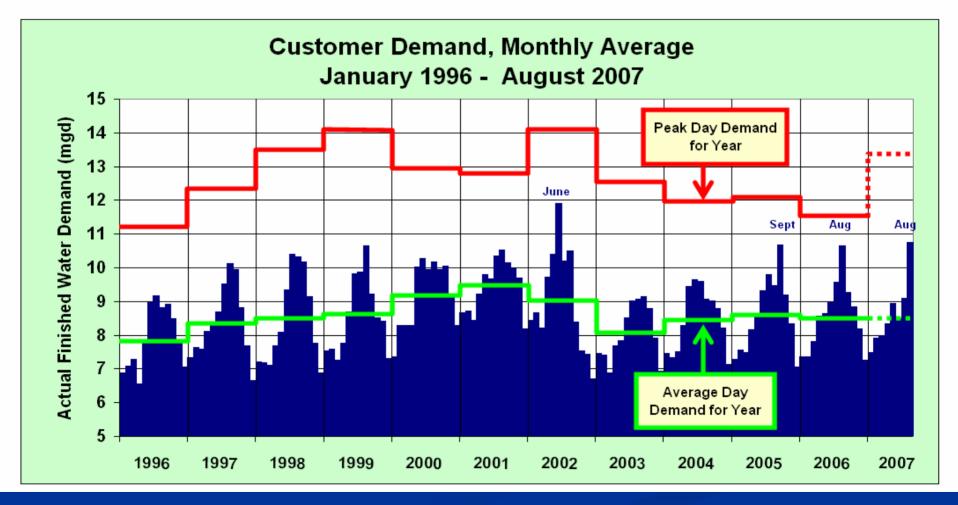
## **Daily Demand**



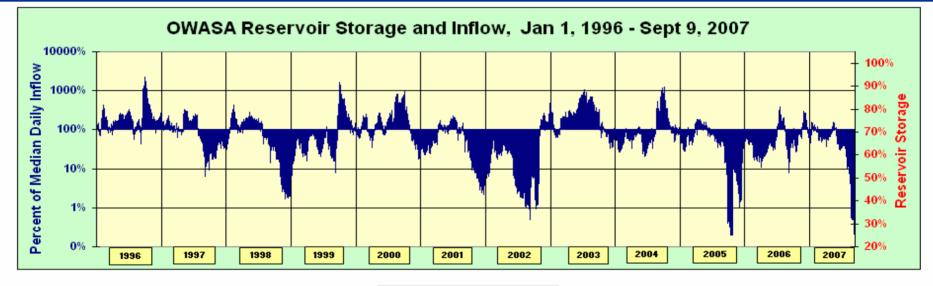
## **Daily Demand**



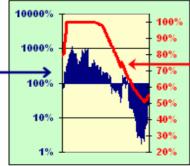
## **Monthly Demand**



## Streamflow and Reservoir Storage

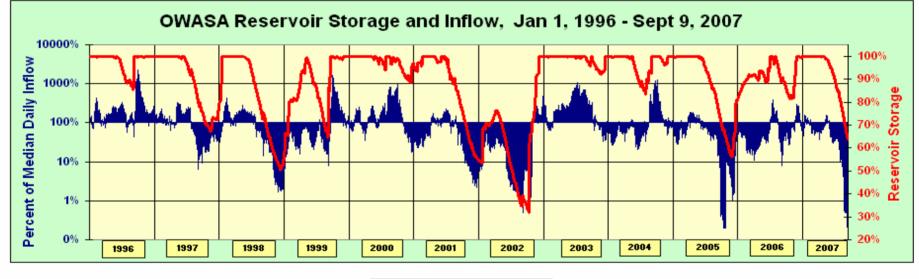


Total Reservoir Inflow (30-day median) as percent of 18-year daily median

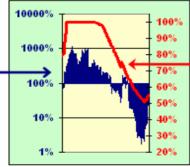


Percent of Total Reservoir Storage

## Streamflow and Reservoir Storage



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



Percent of Total Reservoir Storage

## Sept 1, 2002 vs Sept 1, 2007

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### Sept 1, 2002 vs Sept 1, 2007 39% Reservoir storage: 67% **30-day demand (mgd): 10.5** 10.9 365-day demand: 8.6 9.7 Peak day (summer) 13.3 14,1

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During this same 5-year reporting period, OWASA customer accounts (5/8" meterequivalents) increased by 11%

## **Since '02...**

#### New conservation ordinances.

# New conservation ordinances. Conservation rate structure.

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 WTP process water recycling.

New conservation ordinances. Conservation rate structure. WTP process water recycling. Reclaimed water system with UNC.

#### Decision Guide for Drought Management

#### Reservoir Drawdown Frequency and Guidelines for Conservation Triggers, Average Demand = 9.15 mgd

Number of times (or percent of years) during the 77-year streamflow record in which reservoir storage would have declined to 20% or less during the following 18 months.

		Jan 8.0 mgd	Feb 8.2 mgd	Mar 8.0 mgd	Apr 8.3 mgd	May 9.2 mgd	Jun 9.8 mgd	Jul 10.5 mgd	Aug 10.6 mgd	Sep 10.3 mgd	Oct 9.8 mgd	Nov 9.0 mgd	Dec 8.1 mgd
(su	100% 3358	0	0 0%	0	0 0%	0 0%	0 0%	0 0%	0 0%	0%	0	0	0 0%
Water Remaining in University Lake and Cane Creek Reservoirs (% Full and Million Gallons)	95%	0	0	0	0	0	0	0	0	0	0	0	0
	3190	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %						
Million	90%	0	0	0	0	0	6	0	1	0	0	0	0
	3022	<b>0</b> %	6%	<b>0</b> %	1%	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %				
ll and	85%	0	0	0	0	2	8	6	1	0	0	0	0
	2854	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	3%	9%	0%	194	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %
(% Fu	80%	0	0	0	0	2	3	2	1	1	0	0	0
	2686	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	3%	4%	3%	194	<b>1</b> %	<b>0</b> %	0%	0%
rvoirs	75%	0	0	0	8	2	3	2	T		0	0	0
	2519	<b>0</b> %	<b>0</b> %	<b>0</b> %	6%	3%	4%	3%	PA	Physical Activity of the State of the Stat	<b>0</b> %	<b>0</b> %	<b>0</b> %
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	2351	<b>0</b> %	<b>0</b> %	<b>0</b> %	0%	3%	4%	4%	4%	194	<b>1</b> %	<b>0</b> %	<b>0</b> %
Cree	65%	0	0	0	2	4	4	4	3	j.	1	0	0
	2183	<b>0</b> %	<b>0</b> %	<b>0</b> %	3%	5%	5%	5%	4%	Pro	1%	<b>0</b> %	<b>0</b> %
Cane	60%	0	0	1	4	6	10	6	5	3	1	1	0
	2015	<b>0</b> %	<b>0</b> %	1%	5%	<b>8</b> %	13%	<b>8</b> %	6%	4%	13%	<b>1</b> %	<b>0</b> %
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	839	4%	5%	<b>8</b> %	<b>22</b> %	<b>43</b> %	58%	62%	60%	<b>65</b> %	52%	<b>25</b> %	6%
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			R	isk L	evels	-	0-170		J-070	0-2176	2 1-41 70	40.70	

2002 Reservoir Levels



	Jan <sup>8.0</sup>	Feb 8.2	Mar 8.0	Apr 8.3	May 9.2	Jun 9.8	Jul 10.5	Aug 10.6	Sep 10.3	Oct 9.8	Nov 9.0	Dec 8.1
	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd
100% 3358	0	0	0	0	0	0	0	0	0	0	0	0
33.10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
~ 8	0	0	0	0	0	0	0	0	0	0	0	0
95% 3190	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
۶ 2	0	0	0	0	0	/// <u>\$</u> ///	0	1	0	0	0	0
90% 3022	0%	0%	0%	0%	0%	6%	0%	1%	0%	0%	0%	0%
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25% 839	4%	5%	8%	22%	43%	<b>58</b> %	<b>62</b> %	60%	<b>65</b> %	<b>52</b> %	25%	6%



		Jan 8.0 mgd	FeD 8.2 mgd	Mar 8.0 mgd	Apr 8.3 mgd	May 9.2 mgd	9.8 mgd	JUI 10.5 mgd	AUG 10.6 mgd	Sep 10.3 mgd	9.8 mgd	9.0 9.0 mgd	Dec 8.1 mgd
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	95% 3190	0	0	0	0	0	0	0	0	0	0	0	0
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	25 83	4%	5%	8%	22%	43%	58%	62%	60%	65%	52%	25%	6%

Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

Nov

	Jan 8.0	Feb 8.2	Mar 8.0	Apr 8.3	May 9.2	Jun 9.8	Jul 10.5	Aug 10.6	Sep 10.3	Oct 9.8	Nov 9.0	Dec 8.1
	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd	mgd
% 8 <u>6</u>	0	0	0	0	0	0	0	0	0	0	0	0
100% 3358	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
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95% 3190	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
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30% 1007		5%	8%	18%	35%	49%	51%	51%	<b>52</b> %	32%	9%	4%
്റ	3	4	6	17	33	45	48	46	50	40	19	5
25% 839	4%	5%	8%	22%	43%	58%	<b>62</b> %	<b>60</b> %	<b>65</b> %	52%	25%	6%

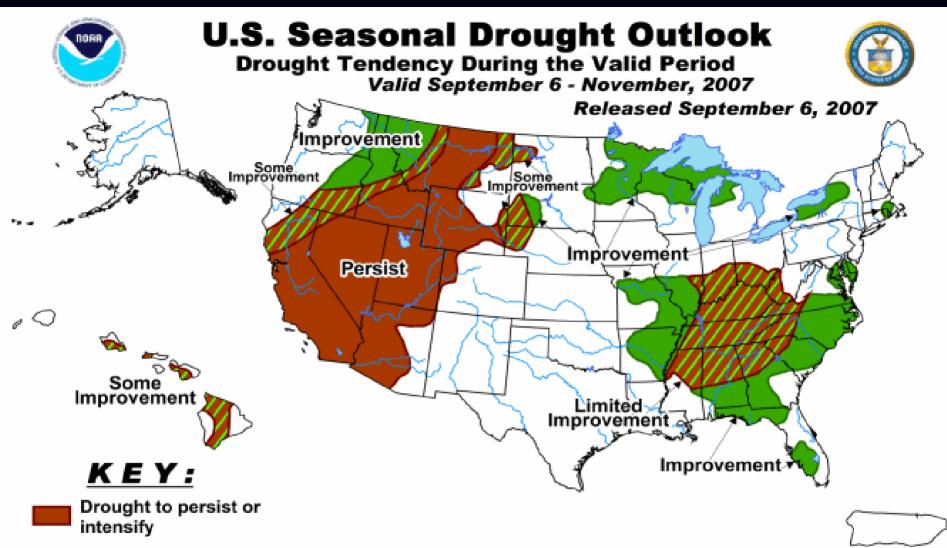


	Jan 8.0 mgd	Feb 8.2 mgd	Mar 8.0 mgd	Apr 8.3 mgd	May 9.2 mgd	Jun 9.8 mgd	JUI 10.5 mgd	Aug 10.6 mgd	Sep 10.3 mgd	OCT 9.8 mgd	NOV 9.0 mgd	Dec 8.1 mgd
100%	0	0	0	0	0	0	0	0	0	0	0	0
3358	<b>0</b> %	0%	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %				
95%	0	0	0	0	0	0	0	0	0	0	0	0
3190	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	0%						
90%	0	0	0	0	0	8	0	1	0	0	0	0
3022	<b>0</b> %	0%	<b>0</b> %	1%	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %				
85% 2854	0 <b>0</b> %	0 <b>0</b> %	0 <b>0</b> %	0 <b>0</b> %	2 3%	9%	8 6%	1 14	0 <b>0</b> %	0 <b>0</b> %	0 <b>0</b> %	0 <b>0</b> %
80%	0	0	0	0	<u>)</u>	3	2	1	1	0	0	0
2686	<b>0</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %	3%	4%	3%	Pa	<b>1</b> %	<b>0</b> %	<b>0</b> %	<b>0</b> %
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70%	0	0	0	8	<u>2</u>	3	3	3	A	1	0	0
2351	<b>0</b> %	<b>0</b> %	<b>0</b> %	0%	3%	4%	4%	4%	VA	<b>1</b> %	<b>0</b> %	<b>0</b> %
65%	0	0	0	2	4	4	4	3	1	1	0	0
2183	<b>0</b> %	<b>0</b> %	<b>0</b> %	3%	5%	5%	5%	4%	194	1%	<b>0</b> %	<b>0</b> %
60%	0	0	1	4	6	10	6	5	3	1	1	0
2015	<b>0</b> %	<b>0</b> %	1%	5%	<b>8</b> %	<b>13</b> %	<b>8</b> %	<b>6</b> %	4%	1%	<b>1</b> %	<b>0</b> %
55%	0	1	2	4	13	12	12	7	3	2	1	0
1847	<b>0</b> %	<b>1</b> %	3%	5%	<b>17</b> %	<b>16</b> %	<b>16</b> %	9%	4%	3%	1%	<b>0</b> %
50%	0	1	2	6	15	18	16	9	6	3	1	1
1679	<b>0</b> %	1%	3%	<b>8</b> %	<b>19</b> %	<b>23</b> %	<b>21</b> %	12%	<b>8</b> %	4%	1%	<b>1</b> %
45%	1	1	3	7	17	21	22	17	8	3	2	1
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1175	1%	4%	6%	<b>16</b> %	<b>32</b> %	44%	44%	<b>40</b> %	<b>35</b> %	<b>19</b> %	4%	3%
30%	1	4	6	14	27	38	39	39	40	25	7	3
1007	1**	5%	<b>8</b> %	<b>18</b> %	<b>35</b> %	<b>49</b> %	51%	51%	52%	<b>32</b> %	9%	4%
25%	3	4	6	17	33	45	48	46	50	40	19	5
839	4%	5%	<b>8</b> %	<b>22</b> %	<b>43</b> %	58%	<b>62</b> %	<b>60</b> %	<b>65</b> %	52%	<b>25</b> %	<b>6</b> %

Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

Unlikely that risk will increase substantially before next spring.

		Jan 8.0	Feb 8.2	Mar 8.0	Apr 8.3	May 9.2	Jun 9.8	Jul 10.5	Aug 10.6	Sep 10.3	Oct 9.8	Nov 9.0	Dec 8.1
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25% 030	839	4%	5%	8%	22%	43%	58%	62%	60%	65%	52%	25%	6%



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Drought ongoing, some improvement

Drought likely to improve, impacts ease

Drought development likely Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination. **OWASA staff recommendation?**  OWASA staff recommendation? *Hope for normal rainfall this winter...*