



ORANGE WATER & SEWER AUTHORITY

AGENDA #1a

Quality Service Since 1977

August 24, 2007

Mayor Mark Chilton
Town of Carrboro
301 West Main Street
Carrboro, NC 27510

Mayor Kevin Foy
Town of Chapel Hill
405 Martin Luther King Jr., Blvd.
Chapel Hill, NC 27516

Chair Moses Carey, Jr.,
Orange County Board of
Commissioners
Post Office Box 8181
Hillsborough, NC 27278

Dear Mayor Chilton, Mayor Foy, and Chair Carey:

Last night the OWASA Board of Directors declared a Water Supply Advisory due to the persistent drought and low streamflow in tributaries to University Lake and the Cane Creek Reservoir and in consideration of our present supply and demand conditions. Our report to the Board is attached.

We believe there is little risk of running out of water this year, but the community could face a substantially more serious shortage next year, when it will be too late to catch up, if rainfall and streamflow are less than normal this winter.

A Water Supply Advisory represents an alert to our customers about the potential shortage and provides notice that additional water use restrictions may be imposed if supply/demand conditions do not improve in the near future. Year-round conservation requirements will remain in effect for all OWASA customers during the Advisory, but additional restrictions will be invoked if a Stage 1 Water Shortage is declared during the coming months.

We will be glad to provide additional information or assistance as needed. In particular, we would be glad to make presentations to the Board of Aldermen, Town Council and Board of Commissioners if desired at any time.

Sincerely,

Michael A. (Mac) Clarke, Chair
Board of Directors

Attachment

c: Ms. Laura Blackmon, Orange County Manager
Mr. Roger Stancil, Chapel Hill Town Manager
Mr. Steven Stewart, Carrboro Town Manager
OWASA Board of Directors
Ed Kerwin, Executive Director
Robert L. Epting, General Counsel

AGENDA ITEM

- RECOMMENDED DECLARATION OF WATER SUPPLY ADVISORY

PURPOSE

- To consider the formal declaration of a Water Supply Advisory per OWASA Conservation Standards and local ordinances.

BACKGROUND

- Current water supply and customer demand conditions support the declaration of a Water Supply Advisory per provisions of OWASA's Water Conservation Standards adopted in 2003 and incorporated into the ordinances of Carrboro, Chapel Hill, and Orange County.
- A Water Supply Advisory represents an alert to customers about a potential shortage and provides notice that additional water use restrictions may be imposed if supply/demand conditions do not improve in the near future. Year-round conservation requirements would remain in effect for all OWASA customers during the Advisory, but additional restrictions would be invoked if a Stage 1 Water Shortage is declared in the coming months.
- We believe there is little risk of running out of water this year, but the community could face a much more serious shortage next year, when it will be too late to catch up, if rainfall and streamflow are less than normal this winter.

ACTION NEEDED

- Review and discussion of attached materials.

STAFF RECOMMENDATION

- Staff recommends that the Board declare a Water Supply Advisory and notify the Carrboro and Chapel Hill Mayors and Chair of the Orange County Board of Commissioners.

August 23, 2007




ORANGE WATER & SEWER AUTHORITY

Quality Service Since 1977

MEMORANDUM

TO: Board of Directors

THROUGH: Ed Kerwin 

FROM: Ed Holland

DATE: August 16, 2007

SUBJECT: Recommended Declaration of Water Supply Advisory

Background

After the record drought of 2002, the OWASA Board adopted new Water Conservation Standards, which Carrboro, Chapel Hill, and Orange County incorporated into local ordinances in 2003. All three jurisdictions specify year-round water use restrictions that remain in place regardless of drought conditions, and additional restrictions that may be invoked under progressively more serious water supply risks designated as Stage 1, 2, 3, or Emergency Shortages. A one-page summary of the stages and restrictions is attached as Exhibit 1.

Since the new ordinances were adopted in 2003, a Water Supply Advisory has been declared only once – at the end of April 2006, after lower than normal winter rainfall and streamflows failed to refill our reservoirs to full capacity. The 2006 Advisory was rescinded two months later when the reservoirs were again full. No declaration of Water Supply Shortage has been invoked since the current ordinances have been in place.

OWASA's determination of advisory or shortage conditions is based on reservoir levels, streamflow, customer demand, availability of supplemental supplies, and other "elements of reasonable professional judgment." These determinations are guided by estimates of the probability that water stored in our reservoir system will decline to unacceptably low levels within the foreseeable future. A graphic presentation of the guide for these decisions is attached as Exhibit 2.

Water Supply Advisory

Our Conservation Standards and the corresponding local ordinances provide for a Water Supply Advisory as follows:

A Water Supply Advisory shall represent an alert to the public of a potential shortage and notification that water use restrictions may be imposed if the water supply and/or demand conditions do not improve in the near future. In the event of a declared Water Supply Advisory:

1. *No mandatory water use restrictions other than year-round requirements already in place will be implemented.*
2. *OWASA shall make extensive use of media releases, advertising, and other reasonable means of publicizing the water supply advisory and the need for immediate voluntary conservation.*

OWASA Water Supply Advisory
August 16, 2007
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3. *OWASA shall inform the Mayors of Carrboro and Chapel Hill and the Chair of the Orange County Board of Commissioners of its declaration of a Water Supply Advisory.*

Recent Supply and Demand Conditions

As illustrated in Exhibit 3, most of central North Carolina is experiencing “severe drought” conditions according to the weekly U.S. Drought Monitor. Conditions in western North Carolina are described as “extreme.” Many of our neighboring communities have recently implemented mandatory water conservation measures.

University Lake and the Cane Creek Reservoir are currently less than 75 percent full, with 2.5 billion gallons of water in storage. This volume represents about nine months of use at an average withdrawal rate of 9 million gallons per day (mgd), or about seven and a half months at a rate of 11 mgd.

The reservoirs were last drawn down to this level in mid-September of 2005, when customer demands were very similar to those recorded during the past month. Due to the relatively large storage capacity of our system, there is little risk of running out of water this year, but we could face a more serious shortage next year – when it would be too late to catch up – if rainfall and streamflow are less than normal this winter.

As illustrated by the black-bordered cells in Exhibit 3, reservoir storage declined at a rate of 330 million gallons per month during the severe drought of 2002. At this time, we don’t believe that Stage 1 restrictions will be necessary, even if current storage declines at the 2002 rate during the coming months. We will continue to re-assess our situation based on evolving supply and demand conditions and long-term weather forecasts. The only factor over which we can exercise any control is, of course, customer demand. Drought conditions are predicted to persist for the foreseeable future.

Staff Recommendation

In view of the conditions described above, we believe it appropriate for the OWASA Board to declare a Water Supply Advisory and to notify the Carrboro and Chapel Hill Mayors and Chair of the Orange County Board of Commissioners accordingly. A draft letter is attached as Exhibit 4. Staff will prepare and disseminate appropriate media releases, public notices, and so forth.



Edward A. Holland, AICP
Planning Director

Attachments

OWASA WATER CONSERVATION ORDINANCE SUMMARY (ADOPTED JUNE 2003)

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 [Even Addresses: Sun, Wed, Fri; Odd Addresses: Tue, Thur, Sat]</p> <p>~</p> <p>All irrigation limited to 1 inch per week</p> <p>~</p> <p>Automatic controllers and moisture sensors required on all irrigation systems</p> <p>~</p> <p>Shut-off nozzles required on all hoses</p> <p>~</p> <p>Wasteful water use prohibited</p> <p>~</p> <p>Leaks must be repaired within 10 days</p> <p>~</p> <p>Use of reclaimed or harvested water strongly encouraged</p> <p>~</p> <p>Restaurants to serve water only on request</p> <p>~</p> <p>Hotels to change bed linens only on request</p> <p>~</p> <p>Dishwashers and clothes washers to be operated with full loads only</p> <p>~</p> <p>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</p> <p>~</p> <p>No mandatory water use restrictions other than year-round requirements already in place</p> <p>~</p> <p>Targeted conservation education and awareness campaign</p>	<p>Spray Irrigation limited to 1 day/week, between 8 PM and 9 AM [Even Addresses: Tue; Odd Addresses: Thur]</p> <p>~</p> <p>All irrigation limited to ½ inch per week</p> <p>~</p> <p>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</p> <p>~</p> <p>No OWASA water to refill ornamental fountains, ponds and like devices</p> <p>~</p> <p>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</p> <p>~</p> <p>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</p> <p>~</p> <p>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</p> <p>~</p> <p>No OWASA water to refill ornamental fountains, ponds, etc.</p> <p>~</p> <p>No vehicle washing, except at commercial or institutional car washes in which 50% of water has been recycled</p> <p>~</p> <p>No OWASA water for filling or refilling empty swimming pools. Operating swimming pools may be topped off.</p> <p>~</p> <p>No OWASA water for cleaning or washing exterior building surfaces or paved areas. Pressure washing of buildings prior to painting is allowed</p> <p>~</p> <p>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</p> <p>~</p> <p>No outdoor use, except for emergency fire suppression or other activities necessary to maintain public health, safety or welfare</p> <p>~</p> <p>No OWASA water to refill ornamental fountains, ponds, etc.</p> <p>~</p> <p>No washing of vehicles</p> <p>~</p> <p>No pressure cleaning of building exteriors</p> <p>~</p> <p>No OWASA water for flushing or pressure testing new lines unless water is recycled</p> <p>~</p> <p>No filling, refilling, or topping off operating swimming pools</p> <p>~</p> <p>Water for heating and cooling to be reduced to the maximum extent allowable</p> <p>~</p> <p>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</p> <p>~</p> <p>Water for heating and cooling to be reduced to the maximum extent allowable</p> <p>~</p> <p>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>

Exhibit 2. 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
Water Remaining in University Lake and Cane Creek Reservoirs (% Full and Million Gallons)	100% 3358	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	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%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%
	90% 3022	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	0 0%	1 1%	0 0%	0 0%	0 0%	0 0%
	85% 2854	0 0%	0 0%	0 0%	0 0%	2 3%	0 0%	0 0%	1 1%	0 0%	0 0%	0 0%	0 0%
	80% 2686	0 0%	0 0%	0 0%	0 0%	2 3%	3 4%	2 3%	1 1%	1 1%	0 0%	0 0%	0 0%
	75% 2519	0 0%	0 0%	0 0%	0 0%	2 3%	3 4%	2 3%	1 1%	1 1%	0 0%	0 0%	0 0%
	70% 2351	0 0%	0 0%	0 0%	0 0%	2 3%	3 4%	3 4%	3 4%	1 1%	1 1%	0 0%	0 0%
	65% 2183	0 0%	0 0%	0 0%	2 3%	4 5%	4 5%	4 5%	3 4%	1 1%	1 1%	0 0%	0 0%
	60% 2015	0 0%	0 0%	1 1%	4 5%	6 8%	10 13%	6 8%	5 6%	3 4%	1 1%	1 1%	0 0%
	55% 1847	0 0%	1 1%	2 3%	4 5%	13 17%	12 16%	12 16%	7 9%	3 4%	2 3%	1 1%	0 0%
	50% 1679	0 0%	1 1%	2 3%	6 8%	15 19%	18 23%	16 21%	9 12%	6 8%	3 4%	1 1%	1 1%
	45% 1511	1 1%	1 1%	3 4%	7 9%	17 22%	21 27%	22 29%	17 22%	8 10%	3 4%	2 3%	1 1%
	40% 1343	1 1%	1 1%	3 4%	8 10%	24 31%	29 38%	26 34%	25 32%	18 23%	5 6%	3 4%	1 1%
	35% 1175	1 1%	3 4%	5 6%	12 16%	25 32%	34 44%	34 44%	31 40%	27 35%	15 19%	3 4%	2 3%
	30% 1007	1 1%	4 5%	6 8%	14 18%	27 35%	38 49%	39 51%	39 51%	40 52%	25 32%	7 9%	3 4%
25% 839	3 4%	4 5%	6 8%	17 22%	33 43%	45 58%	48 62%	46 60%	50 65%	40 52%	19 25%	5 6%	

Conservation Stages and Risk Levels =

NORM	ADV	#1	#2	#3	EMRG
0-1%	1-3%	3-8%	8-21%	21-47%	48+%

2002 Reservoir Levels

2005 Reservoir Levels

2007 Reservoir Levels

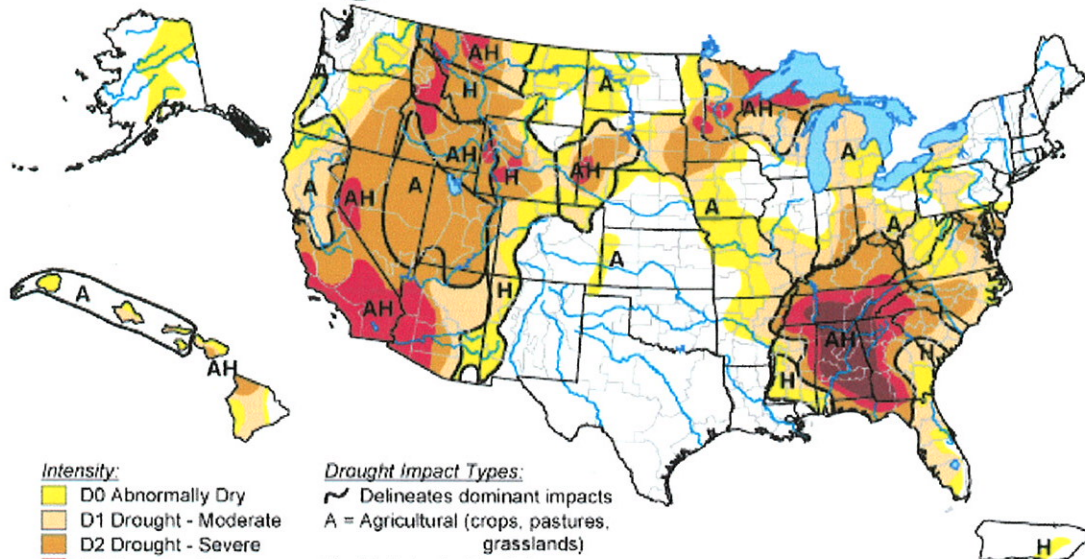
Each cell of the table contains an integer and a percentage, which represent the probability that reservoir levels will decline to 20 percent or less of full capacity during the following 18 months. These were calculated from spreadsheet model runs of 77+ years of daily streamflow data, updated through January 2003, and driven by monthly water demand and reservoir storage at the beginning of each month. Calculations were based on an average annual raw water demand of 9.15 mgd, adjusted by observed monthly ratios, which are reflected in monthly demands shown at the top of the table.

Each column of the table corresponds to a month, and each row corresponds to reservoir storage at the beginning of that month. Storage is subdivided into increments of 5% and also expressed as million gallons (MG).

Colors indicate the corresponding conservation and risk levels proposed for each condition. Cells highlighted in black, blue, or orange represent actual reservoir storage conditions at the beginning of that month during the current year (orange), the severe drought year of 2002 (black), and 2005 (blue), which was the most recent year in which substantial reservoir drawdowns occurred.

U.S. Drought Monitor

August 14, 2007
Valid 8 a.m. EDT



- Intensity:**
- D0 Abnormally Dry
 - D1 Drought - Moderate
 - D2 Drought - Severe
 - D3 Drought - Extreme
 - D4 Drought - Exceptional

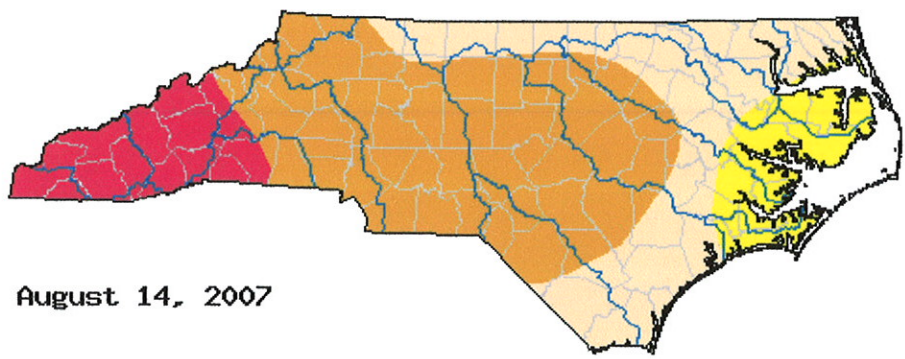
- Drought Impact Types:**
- Delineates dominant impacts
 - A = Agricultural (crops, pastures, grasslands)
 - H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, August 16, 2007
Author: Brad Rippey, U.S. Department of Agriculture



August 14, 2007