



ORANGE WATER AND SEWER AUTHORITY
Quality Service Since 1977

October 30, 2007

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

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

Mayor Kevin Foy
 Town of Chapel Hill
 405 Martin Luther King Jr. Blvd.
 Chapel Hill, NC 27514

Dear Mayor Chilton, Mayor Foy and Chair Carey:

Enclosed is our quarterly report for September and October, 2007.

We encourage you to be especially aware of the section of this report regarding our recent annual update of our Master Planning analysis and projections of our community's water demand and supply.

Please feel free to contact me or our staff if you would like a presentation or further details about any of the items in the enclosed report.

Sincerely,

Randy Kabrick, P.E.
 Chair, OWASA Board of Directors

Enclosure

c: Ms. Laura Blackmon, Orange County Manager (w/encs.)
 Mr. Roger L. Stancil, Chapel Hill Town Manager (w/encs.)
 Mr. Steven Stewart, Carrboro Town Manager (w/encs.)
 OWASA Board of Directors (w/encs.)
 Ed Kerwin, OWASA Executive Director (w/encs.)



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Quarterly Report to Local Governments October 30, 2007

OWASA's September 4, 2007 Annual Report to Local Governments summarized major accomplishments and activities for Fiscal Year 2007 (July 2006 – June 2007). This more abbreviated report provides new or updated information for August – September, 2007. Additional materials are available on request. OWASA Board members and staff will be glad to provide presentations if desired.

Water Supply – In response to ongoing drought conditions and higher than projected customer demands, the OWASA Board of Directors declared a Stage 1 Water Shortage on September 27, 2007. This was elevated to Stage 2 on October 18. As of this writing (October 30, 2007), OWASA's Cane Creek and University Lake reservoirs contain 1.70 billion gallons of water, which is about 51 percent of their capacity. An additional 200 million gallons is available in our Stone Quarry Reservoir. Assuming no further rainfall and our current 30-day average demand of 8.9 million gallons per day (mgd), this represents about 213 days of water remaining in storage.

Rainfall totaling 4.7 and 3.2 inches was recorded at our Jones Ferry Road Water Plant and Cane Creek Reservoir, respectively, from October 24th through the 27th. Stream gages above both reservoirs registered a small amount of flow for the first time since the beginning of August. Our reservoirs gained a net total of 31 million gallons during the four days of rain.

Before the drought of 2002 ended on October 10 of that year, reservoir storage had declined to 1.1 billion gallons, or 32 percent of capacity. With the onset of heavy rains, University Lake refilled overnight, but the Cane Creek Reservoir was not full until December 5 (due to its greater storage capacity). Approximately 13 inches of rain fell during those two months.

OWASA's reservoir model, which is based on 81 years of daily streamflow records, indicates that the probability of our reservoirs being drawn down to critical levels (less than 20 percent of storage) during the next 18 months is less than three percent. The model also indicates that the probability of the reservoirs refilling by April 1, 2008 is greater than 90 percent.

We are aware that our historically-based risk model may not adequately reflect more recently recognized uncertainties of global climate change, and that ongoing drought conditions may yet exceed the extremes of the 81-year record. However, when the model is run with a 20 percent reduction in the 81-year streamflow record (a rough

approximation of drier future climate conditions), the probability that the reservoirs will refill by April 1 is still greater than 80 percent. However, below average rainfall is predicted this winter.

Daily customer demands have declined substantially during the past several weeks and is tracked graphically on OWASA's website at www.owasa.org.

Further Response to the Drought – The OWASA Board is continuing to monitor supply and demand conditions very closely and the following action items are underway:

- Aggressive public education and enforcement, including specific customer guidance for reducing demand by 50 percent.
- Targeted communications with high-volume users and other stakeholder groups.
- Continued collaboration with UNC as they prepare a detailed campus demand management plan.
- Specific recommendations for additional long-term water conservation to be presented to the OWASA Board on November 8th, then to the Carrboro, Chapel Hill and Orange County governing boards.
- Began disconnecting approximately 230 irrigation-only meters on October 26.
- Reclaimed water to be available for bulk use in early November.
- Evaluating the feasibility of a temporary system to deliver reclaimed water to UNC.
- Continuing emergency water supply planning efforts with other utilities in the region.

New Water and Sewer Rates in Effect – All customers have received brochures describing OWASA's new increasing block water rates that went into effect on October 1, 2007 for individually-metered residential customers. Additional drought surcharges will also go into effect on November 1st for the higher consumption rate blocks. Non-residential customers, including businesses, the University, and master-metered apartment complexes, will continue to be billed through the seasonal rate structure; i.e., higher water prices from May through September, and lower prices from October through April.

Mason Farm Wastewater Treatment Plant – The \$50+ million upgrade and expansion of the wastewater plant has been completed, and OWASA will host a dedication ceremony on November 8, 2007.

The plant's capacity has been increased from 12 million mgd to 14.5 mgd. The project included the addition of filters to improve treated water quality, a second large generator for back-up electrical power, odor elimination improvements, better solids and nutrients removal, ultraviolet light disinfection, and an improved system for capturing and using methane gas. The WWTP improvements will support the new reclaimed water (RCW) system and, with the associated increases in operating costs, will enable OWASA to meet the proposed nitrogen and phosphorus removal requirements in the State's Jordan Lake Nutrient Management Strategy until wastewater flows reach the plant's 14.5 mgd

Quarterly Report to Local Governments

October 30, 2007

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capacity some years from now. We have completed the construction of a new biosolids dewatering facility, which reduces the amount of liquid in our biosolids, thereby improving the economy and sustainability of our biosolids recycling program. OWASA recently entered into a five-year contract with a private firm which will provide composting services for dewatered biosolids and market the composted end-product.

Installation of an above-ground gas handling system for the biosolids digesters has resolved odor releases due to deficiencies of the previous underground pipe system. Work on three additional odor elimination improvements is on schedule to be completed by December 31, 2007.

Joint Meeting Of Local Officials – Representatives of Orange and Chatham Counties, Pittsboro, Chapel Hill, Carrboro, OWASA, and UNC will meet at 6:00 Tuesday, October 30, 2007 at the County's Southern Human Services Center in Chapel Hill. This will be the second of a series of meetings intended to share information and discuss issues of mutual interest. The October 30 agenda includes an item on water, as well as four other regional topics.

Capital Improvement Projects – Capital projects to improve the reliability of OWASA water and sewer lines in Carrboro and Chapel Hill are proceeding as described in the September 4, 2007 Annual Report to Local Governments.

Carolina North – OWASA staff has worked closely with UNC's Carolina North design team to ensure that the development will be as water-efficient as possible, and that preliminary plans and conceptual layouts do not preclude or constrain future options for reclaimed water. We expect to provide updated estimates of the projected effects of Carolina North on OWASA's water and sewer system as more detailed development plans are submitted to the Town of Chapel Hill during the coming months.

Annual Update of OWASA's *Comprehensive Water and Sewer Master Plan* – OWASA staff has updated the *2001 Master Plan* with recent data, strategic trends, and commentary (October 2007). Printed copies and supporting graphics of the update report are available on request or online at www.owasa.org. This information will be presented to the Chapel Hill Town Council on November 7, 2007. Similar presentations may be provided to the Carrboro Board of Aldermen and Orange County Commissioners if desired.

Principal findings of the *Master Plan* update report include:

- Water sales and reservoir withdrawals for the past six years have remained below the historically high levels observed in 2001. Water withdrawals from University Lake and Cane Creek are 23 percent less in 2007 than were projected in OWASA's *2001 Master Plan*. Average drinking water demand during the past four years has decreased 10 percent from the preceding three-year (2000-2002) average, while the total number of OWASA meter equivalents grew by more than seven percent

during the same period. Per-household residential consumption has decreased by more than 11 percent since 2001, and substantial reductions in summer peak demands continue to indicate that customers are generally using less water outdoors.

- A continuing trend of lower peak flows at the Mason Farm Wastewater Treatment Plant during rainy periods suggests that OWASA's long-term efforts to systematically identify, repair, and replace older sewer lines and to remove inappropriate storm drain connections are successfully reducing the unwanted inflow and infiltration of stormwater into the sewer system. Lower peak demands at both the water and wastewater treatment plants will delay the need for costly future plant expansions.
- The existing reservoir/quarry water supply system and its future expansion can meet the ultimate buildout needs of the Carrboro/Chapel Hill/University community. However, if projected demands are not reduced further and/or additional water supply sources are not developed, the community will become more vulnerable to severe drought conditions beginning in the early 2020s until the Stone Quarry expansion is available for water storage in the early to mid- 2030s. The primary goal of OWASA's long-range conservation program and the reclaimed water system is to reduce water shortage risks without having to build costly new facilities to get water from Jordan Lake.
- Water quality in OWASA's University Lake and Cane Creek Reservoir remains good, but not pristine, as indicated by periodic blooms of blue-green algae, especially in University Lake. Bloom conditions appear to be aggravated by prolonged summer periods of high temperature and low streamflow, and both reservoirs remain sensitive to nitrogen and phosphorus inputs from their respective watersheds. It is possible that these reservoirs may be subject to regulatory action in the future due to periodic exceedances of North Carolina water quality standards for chlorophyll *a*, an indicator of algae and nutrient enrichment. OWASA staff are in contact with NC Division of Water Quality staff regarding the potential regulatory issue and continue to work with local agencies implementing appropriate conservation practices in the watersheds.
- OWASA's recently completed wastewater treatment plan upgrade and expansion included \$11 million for facilities to remove nitrogen and phosphorus to the proposed Jordan Lake nutrient limits, which represent the current limits of technology. The wastewater plant can now meet those requirements – at least until it reaches its new capacity of 14.5 million gallons per day (mgd). Without significant technological advances, OWASA may not be able to meet the proposed nitrogen limit when average day wastewater flows exceed 14.5 mgd, at which time it may be necessary to restrict additional connections to the wastewater system.

MONTHLY SUMMARY OF CALLS AND E-MAILS TO OWASA
FROM NEIGHBORS REPORTING ODOR
IN THE MASON FARM WASTEWATER TREATMENT PLANT AREA

September-October, 2007

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------------------------|
| January | 11 | 3 | 9 | 0 | 8 | 3 |
| February | 7 | 5 | 2 | 0 | 8 | 0 |
| March | 9 | 0 | 7 | 1 | 10 | 6 |
| April | 9 | 2 | 4 | 0 | 9 | 3 |
| May | 6 | 0 | 2 | 5 | 8 | 3 |
| June | 4 | 1 | 1 | 1 | 5 | 1 |
| July | 1 | 0 | 2 | 0 | 0 | 4 |
| August | 1 | 0 | 4 | 3 | 11 | 2 |
| September | 2 | 5 | 2 | 2 | 9 | 3 |
| October | 2 | 6 | 1 | 1 | 8 | 9 |
| November | 0 | 0 | 1 | 7 | 2 | |
| December | 3 | 3 | 2 | 5 | 8 | |
| TOTALS | 55 | 25 | 37 | 25 | 86 | 34 (year to date) |

**LOG OF CALLS AND E-MAILS TO OWASA
FROM NEIGHBORS REPORTING ODOR IN THE MASON FARM
WASTEWATER TREATMENT PLANT (WWTP) AREA**

September-October, 2007

| date | time | location |
|-------------|-------------|-----------------|
| 09/10/2007 | 9:15 am | Highland Woods |
| 09/17/2007 | 9:20 am | Highland Woods |
| 09/26/2007 | 7:22 am | Highland Woods |
| 10/02/2007 | 8:00 pm | Highland Woods |
| 10/09/2007 | 7:10 am | Highland Woods |
| 10/10/2007 | 8:40 pm | Highland Woods |
| 10/13/2007 | 8:30 pm | Highland Woods |
| 10/17/2007 | 9:30 am | Highland Woods |
| 10/20/2007 | 7 pm | Highland Woods |
| 10/20/2007 | 11:32 pm | Highland Woods |
| 10/20/2007 | 11:40 pm | Highland Woods |
| 10/23/2007 | 8:30 pm | Highland Woods |

E-mails from OWASA to neighbors
of the Mason Farm Wastewater Treatment Plant (WWTP)
regarding expected odor releases and related items

May -August, 2007

| Date | Topic/Comments: |
|-------------|--|
| September 7 | OWASA's annual report to the Town of Chapel Hill including odor elimination items |
| October 12 | Invitation to Dedication Ceremony at the Mason Farm Wastewater Treatment Plant on November 8th |

**DISTRIBUTION LIST FOR OWASA E-MAILS ABOUT ODOR RELEASES FROM
THE MASON FARM WWTP AND RELATED ITEMS (August 31, 2007)**

| NEIGHBORHOOD/ORGANIZATION | NAME |
|----------------------------------|---|
| Highland Woods | Alice W. Neebe |
| | Paul Neebe |
| | Malcolm Forbes |
| | Gary Richman |
| | Robert and Melissa Porter |
| | Peg Parker |
| | Jeffrey Tate and Anna Schwab |
| | Seth Kingsbury |
| | Amanda Kingsbury |
| | Abraham Nussbaum |
| | Elin Nussbaum |
| | Kay Johnson |
| | Reed Johnson |
| | Rex Bartles |
| | Dan Pollitt |
| | Mary Ellen Bierck |
| | Barnes Bierck |
| | Nortin Hadler |
| | Carol Hadler |
| | Frank P. Rexford |
| | Christina and Rex Page |
| | Ed Ludwig |
| | Joy Javits, President, Highland Woods Association |
| | Gunilla Luboff |
| | Fred Hall |
| | John and Anna K Schwab |
| | Mary Helen and Donald Hayman |
| Finley Forest | Adam Kimplead |
| | Cindy Underwood |
| | Dan Puckett |
| | Donna Kaye |
| | David J. Polewka |
| | Kathryn Conard |
| | Dan Choi |
| | Julie Maness |
| | Maria Fernandez |
| Laurel Hill Road area | Phyllis Barrett |
| | Bob Wendell, President, Laurel Hill Association |
| | Carol David |
| | Pat Evans |
| | Ewan Rodewald and Sharon Hodge |
| | Joe Ferrell |
| | Dr. Sian Kwa |

| NEIGHBORHOOD/ORGANIZATION | NAME |
|-----------------------------------|---|
| | Marcella and Paul Grendler |
| | Carolyn Goldfinch |
| | Carol Hazard and Winston Liao |
| | Dick and Marie Clark |
| | Kay Goldstein |
| | Ann Wilson |
| St. Thomas More Church and School | St. Thomas More staff |
| | Carlos Lima |
| Morgan Creek area | Ellen Johnson |
| | Betsy Malpass |
| | Hanson Malpass |
| | Laura King Moore |
| | Jeanne Langley |
| | John Pendergrass |
| | Gary Glish |
| Ronald McDonald House | Shelly Day |
| Family House | Matt Hapgood |
| Reserve | Steve McPhail, President, Hunt's Reserve Homeowners |
| | Steven and Susan Frye |
| | Doug Longman |
| | Barbara and Edward Paradise |
| | Jeanne & David Jarrett |
| | Nadine O'Malley |
| | Mark Witcher |
| | Ralph Abrahams |
| | Kathy Abrahams |
| Bayberry Drive area | William Ware |
| UNC | Jim Ward--office |
| | Jim Ward--home |
| | Peter White, Director |
| | Johnny Randall, Assistant Director |
| | Carolyn Elfland, Assoc. Vice Chancellor |
| | Ray DuBose, Energy Services Director |
| | Margaret Holton, Water, Sewer & Stormwater Coord. |
| | Raymond Hackney, Environment, Health and Safety |
| | Brent Webber, Environment, Health and Safety |
| | Ross Fowler |
| | Willie Scroggs |
| | Michael Wilkinson, golf pro |
| | John Inman, Men's Golf Coach |
| | Sally Austin, Women's Golf Coach |
| | Aaron Bednar |
| | UNC Tennis Center |
| | UNC parking |
| | Mike McFarland, Corporate Relations |
| | Scott Ragland, Corporate Relations |
| | Lisa Katz, Corporate Relations |
| | Linda Convissor, Corporate Relations |

| NEIGHBORHOOD/ORGANIZATION | NAME |
|----------------------------------|---|
| | Jonathan Howes, Corporate Relations |
| | Married Student Housing Manager |
| | UNC Farm (Faculty Staff Recreation Association) |
| | Steve Reznick, UNC Farm Association President |
| | Jim McAdams, Energy Services |
| | Jim Alty, Facility Services |
| | Cameron Smith, Construction Management |
| UNC Hospitals | Lynn Wooten, Corporate Relations |
| | Mel Hurston |
| | Karen McCall |
| | M. Patrick Wall, Plant Engineering/Maintenance |
| Town of Chapel Hill | Roger Stancil, Town Manager |
| | Florentine A. Miller, Deputy Town Manager |
| | Bruce Heflin, Asst. Town Manager |
| | Ralph Karpinos, Town Attorney |
| | Bill Letteri, Public Works Director |
| | Richard Terrell, Public Works Operations Supt. |
| | Greg Ling, Street Supervisor |
| | Robert Sykes, Public Works |
| | Dan Jones, Fire Chief |
| | Robert Bosworth, Deputy Fire Chief |
| | Bob Overton, Police |
| | Brian Curran, Police |
| | Richard Terrell, PW Operations Supt. |
| | George Small, Town Engineer |
| | Larry Tucker, Engineering |
| | Steve Spade, Transportation Director |
| | Kurt Neufeng, Transit |
| | Butch Kisiah, Parks and Recreation Director |
| | Bill Webster, Parks and Recreation |
| | Ted Hobgood, Manager's Office |
| | Catherine Lazorko, Public Information Officer |
| | Lance Norris, Inspections Director/Acting Public Works Director |
| | Jennie Bob Culpepper, Planning Director |
| | Phil Mason, Planner |
| | Kumar Neppalli, Traffic Engineer |
| | Sabrina Oliver, Town Clerk |
| | Sandy Kline, Deputy Town Clerk |
| City Schools | Neil Pedersen, Superintendent |
| | Steve Scroggs |
| | Bill Mullin |
| Orange County | Tom Konsler, Environmental Health |
| | Orange 911 Center Supervisor on duty |
| | Mike Tapp, Fire Marshall |
| Other Utilities | Davis Montgomery, Duke Energy |
| | Steve Small, Duke Energy |
| | Billy Miller, PSNC |
| | Time Warner Cable |

| NEIGHBORHOOD/ORGANIZATION | NAME |
|---------------------------|--|
| | ATT/BellSouth |
| Other | Aldersgate Methodist Church c/o Deil Wright |
| | Aurora Restaurant |
| | Meadowmont Apts. |
| | Dave Hill, Meadowmont Homeowners |
| | Contractor (Mike Angelli, Pizzagalli Construction) |
| | Pat Porter, Oaks Condominiums Owners Assoc. |
| | Vanessa Blackwood-Spinks, Glen Lennox Apts. Mgr. |
| | Aaron Nelson, Chamber of Commerce |

**SUMMARY OF ON-SITE AND OFF-SITE ODOR INSPECTIONS
AND NUMBER OF TIMES ODOR WAS DETECTED AT THE VARIOUS MONITORING SITES**

ON-SITE:

| Month and year | Total Inspections | Entrance Gate (1) | Generator Bldg. (2) | Old Outfall (3) | UV Complex (4) | Solids Tanks (5) | Odor Scrubber (6) | Head-works (7) | Digesters (8) | UNC Bldg. (9) |
|----------------|-------------------|-------------------|---------------------|-----------------|----------------|------------------|-------------------|----------------|---------------|---------------|
| Sept 07 | 96 | 36 | 28 | 9 | 0 | 40 | 45 | 65 | 54 | 6 |
| Oct 07 | 84 | 18 | 18 | 2 | 1 | 21 | 23 | 32 | 29 | 15 |
| Totals | 180 | 54 | 46 | 11 | 1 | 61 | 68 | 97 | 83 | 21 |
| % | ---- | 12% | 10% | 2% | 0% | 14% | 15% | 22% | 19% | 5% |

OFF-SITE:

| Month and year | Total Inspections | Mc Donald House (1) | Highland Woods-A (2) | Highland Woods-B (3) | Athletic Assoc. (4) | Finley GC (5) | Silers Fen Ct. (6) | Morgan Cliff Ct. (7) | Kings Mill Rd. (8) | Laurel Hill Rd. (9) | Botanical Garden (10) |
|----------------|-------------------|---------------------|----------------------|----------------------|---------------------|---------------|--------------------|----------------------|--------------------|---------------------|-----------------------|
| Sept 07 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Oct 07 | 7 | 2 | 1 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 |
| Totals | 10 | 2 | 1 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 0 |
| % | ---- | 17% | 8% | 0% | 25% | 50% | 0% | 0% | 0% | 0% | 0% |

Notes:

- 1) Information for the month of October is through October 28, 2007.
- 2) All on-site odor events were characterized by the WWTP Operators as “Mild” with odors that would not be expected to create an off-site problem except October 25, 2007 at 7:15 AM when the odor was characterized as “Strong” at the Headworks (7) and Digesters (8).
- 3) All off-site odor events were characterized by the Collections Staff as “Mild” except for October 13, 2007 and October 20, 2007 when the odor was characterized as “Strong” at the Finley Golf Course (5).