

The Division of Water Resources (DWR) provides the data contained within this Local Water Supply Plan (LWSP) as a courtesy and service to our customers. DWR staff does not field verify data. Neither DWR, nor any other party involved in the preparation of this LWSP attests that the data is completely free of errors and omissions. Furthermore, data users are cautioned that LWSPs labeled **PROVISIONAL** have yet to be reviewed by DWR staff. Subsequent review may result in significant revision. Questions regarding the accuracy or limitations of usage of this data should be directed to the water system and/or DWR.

## 1. System Information

### Contact Information

Water System Name:	Durham	PWSID:	03-32-010
Mailing Address:	101 City Hall Plaza Durham, NC 27701	Ownership:	Municipality
Contact Person:	Vicki Westbrook	Title:	Assistant Director, Water Management
Phone:	919-560-4381	Fax:	919-560-4479
Secondary Contact:	Don Greeley, Director	Phone:	919-560-4381
Mailing Address:	1600 Mist Lake Drive Durham, NC 27704	Fax:	919-560-4479

### Distribution System

Line Type	Size Range (Inches)	Estimated % of lines
Asbestos Cement	6-8	1.00 %
Cast Iron	6-24	35.00 %
Ductile Iron	6-42	62.00 %
Other	36-54	2.00 %

What are the estimated total miles of distribution system lines? **1,221 Miles**  
 How many feet of distribution lines were replaced during 2007? **0 Feet**  
 How many feet of new water mains were added during 2007? **0 Feet**  
 How many meters were replaced in 2007? **1,132**  
 How old are the oldest meters in this system? **13 Year(s)**  
 How many meters for outdoor water use, such as irrigation, are not billed for sewer services? **1,977**  
 What is this system's finished water storage capacity? **20.000 Million Gallons**  
 Has water pressure been inadequate in any part of the system since last update? **No**

The number of feet of new water main is not readily available. The City inspected 74,577 feet of new water main, but that includes both public and private lines.

### Programs

Does this system have a program to work or flush hydrants? **Yes, Annually**  
 Does this system have a valve exercise program? **Yes, 2 Years or More**  
 Does this system have a cross-connection program? **Yes**  
 Does this system have a program to replace meters? **Yes**  
 Does this system have a plumbing retrofit program? **No**  
 Does this system have an active water conservation public education program? **Yes**  
 Does this system have a leak detection program? **Yes**

### Water Conservation

What type of rate structure is used? **Uniform**  
 How much reclaimed water does this system use? **0.000 MGD** For how many connections? **0**  
 Does this system have an interconnection with another system capable of providing water in an emergency? **Yes**

Bulk reclaimed water permit received in December, 2007 for 80,000 gallons per day.

## 2. Water Use Information

### Service Area

Sub-Basin(s)	% of Service Population	County(s)	% of Service Population
Haw River (02-1)	56 %	Durham	100 %
Neuse River (10-1)	44 %		

What was the year-round population served in 2007? **220,000**

Has this system's acquired another system since last report? **No**

### Water Use by Type

Type of Use	Metered Connections	Metered Average Use (MGD)	Non-Metered Connections	Non-Metered Estimated Use (MGD)
Residential	71,296	14.940	0	0.000
Commercial	3,953	5.410	0	0.000
Industrial	129	1.190	0	0.000
Institutional	810	2.790	0	0.000

How much water was used for system processes (backwash, line cleaning, flushing, etc.)? **0.900 MGD**

### Water Sales

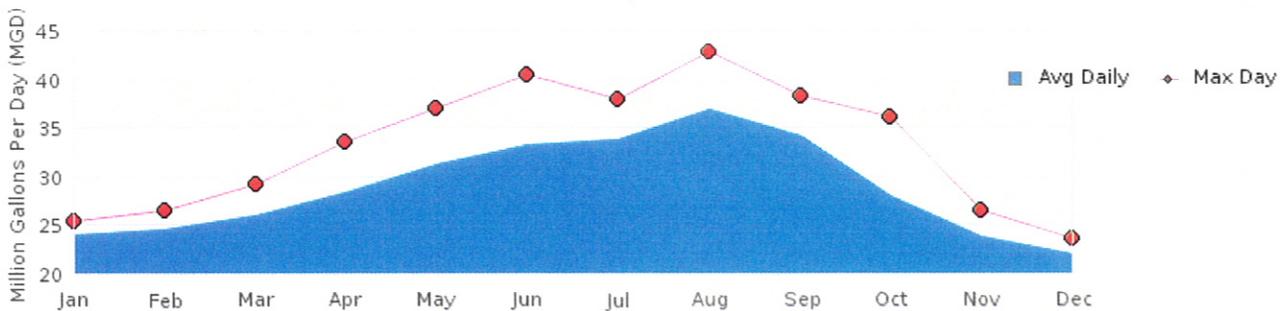
Purchaser	PWSID	Average Daily Sold (MGD)	Days Used	MGD	Contract Expiration	Recurring	Required to comply with water use restrictions?	Pipe Size(s) (Inches)	Use Type
Cary	03-92-020	0.811	4	0.000	2008	Yes	Yes	16	Emergency
Chatham Co	03-19-126	0.000	0	0.200	2010	Yes	Yes	16	Emergency
Hillsborough	03-68-015	0.000	0	0.000	2008	Yes	Yes	16	Emergency
Orange-Alamance	03-68-020	0.000	0	0.000	2008	Yes	Yes		Emergency
OWASA	03-68-010	0.000	0	0.000	2008	Yes	Yes	12	Emergency

## 3. Water Supply Sources

### Monthly Withdrawals & Purchases

	Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)		Average Daily Use (MGD)	Max Day Use (MGD)
Jan	23.820	25.440	May	31.180	37.000	Sep	34.120	38.340
Feb	24.380	26.480	Jun	33.240	40.440	Oct	27.920	36.170
Mar	25.880	29.140	Jul	33.790	37.860	Nov	23.690	26.410
Apr	28.300	33.470	Aug	36.880	42.860	Dec	21.990	23.610

Durham's 2007 Monthly Withdrawals & Purchases



**Surface Water Sources**

Stream	Reservoir	Average Daily Withdrawal		Maximum Day Withdrawal (MGD)	Available Raw Water Supply		Usable On-Stream Raw Water Supply Storage (MG)
		MGD	Days Used		MGD	* Qualifier	
Cape Fear	Jordan Lake	1.750	0	2.122	10.000	C	100.000
Eno River		1.320	9	3.900	5.000	F	0.000
Flat River	Lake Michie	15.380	241	30.000	19.000	SY50	3,300.000
Little River	Little River Lake	24.020	270	45.000	18.000	SY50	4,900.000

\* Qualifier: C=Contract Amount, SY20=20-year Safe Yield, SY50=50-year Safe Yield, F=20% of 7Q 10 or other instream flow requirement, CUA=Capacity Use Area Permit

**Surface Water Sources (continued)**

Stream	Reservoir	Drainage Area (sq mi)	Metered?	Sub-Basin	County	Year Offline	Use Type
Cape Fear	Jordan Lake	1,690	Yes	Haw River (02-1)	Chatham		Regular
Eno River		144	Yes	Neuse River (10-1)	Durham		Emergency
Flat River	Lake Michie	168	Yes	Neuse River (10-1)	Durham		Regular
Little River	Little River Lake	97	Yes	Neuse River (10-1)	Durham		Regular

What is this system's off-stream raw water supply storage capacity? **135 Million gallons**

Are surface water sources monitored? **Yes, As Needed**

Are you required to maintain minimum flows downstream of its intake or dam? **Yes**

Does this system have the ability to transfer surface water between river basins? **Yes**

Does this system rely on the transfer of surface water between river basins for any of its existing water supply? **No**

Does this system anticipate transferring surface water between river basins? **Yes**

The Eno River, Flat River and Little River are all in the Neuse Basin. North Durham WRF effluent returns to the Neuse (Falls Lake) and South Durham WRF effluent returns to the Cape Fear/Haw River Basin (Jordan Lake).

As the drought escalated, Durham obtained water from Jordan Lake through the Town of Cary (finished water) from September through December, accessing a portion (1.75 MGD) of the 10 MGD allocation granted to Durham in 2002. The 1.75 MGD water supply from Jordan Lake via the Town of Cary as finished water supply is properly accounted for under "Water Purchases From Other Systems" noted below.

**Water Purchases From Other Systems**

Seller	PWSID	Average Daily Purchased (MGD)	Days Used	Contract			Required to comply with water use restrictions?	Pipe Size (s) (Inches)	Use Type
				MGD	Expiration	Recurring			
Cary	03-92-020	1.750	104	0.000	2008	Yes	Yes	16	Regular
Chatham Co	03-19-126	0.000	0	0.000	2010	Yes	Yes	16	Emergency
Hillsborough	03-68-015	0.000	0	0.000	2008	Yes	Yes	16	Emergency
Orange-Alamance	03-68-020	0.000	0	0.000	2008	Yes	Yes	16	Emergency
OWASA	03-68-010	1.380	5	0.000	2008	Yes	Yes	12	Emergency

Water purchased from the Town of Cary was part of Durham's Jordan Lake 10 MGD allocation.

**Water Treatment Plants**

Plant Name	Permitted Capacity (MGD)	Is Raw Water Metered?	Is Finished Water Output Metered?	Source
Brown Water Treatment Plant	30.000	Yes	Yes	Lake Michie, Little River
Williams Water Treatment Plant	22.000	Yes	Yes	Lake Michie, Little River

Did average daily water production exceed 80% of approved plant capacity for five consecutive days during 2007? **No**

If yes, was any water conservation implemented?

Did average daily water production exceed 90% of approved plant capacity for five consecutive days during 2007? **No**

If yes, was any water conservation implemented?

Are peak day demands expected to exceed the water treatment plant capacity in the next 10 years? **Yes**

## 4. Wastewater Information

### Monthly Discharges

	Average Daily Discharge (MGD)		Average Daily Discharge (MGD)		Average Daily Discharge (MGD)
Jan	22.160	May	17.030	Sep	16.010
Feb	20.130	Jun	16.790	Oct	16.960
Mar	20.450	Jul	15.610	Nov	15.930
Apr	19.990	Aug	15.920	Dec	16.380



How many sewer connections does this system have? **69,907**

How many water service connections with septic systems does this system have? **4,814**

Are there plans to build or expand wastewater treatment facilities in the next 10 years? **Yes**

Current contract for design of an additional aeration basin for NDWRF. Future plans for upgrades to meet expected limits for biological nutrient removal.

Values in the above table include wastewater discharges only from the city's water customers that have a sewer account. The city's water customers serviced by the sewer collection system owned and maintained by the county discharged on average 4.5 MGD to the Durham County Wastewater Treatment Plant. Monthly average discharge values from the city's water customers that have a sewer account with the city, and those serviced by the county's sewer collection system are represented as follows:

Jan = 26.66 MGD May = 21.53 MGD Sept = 20.51 MGD  
 Feb = 24.63 MGD June = 21.29 MGD Oct = 21.46 MGD  
 Mar = 24.95 MGD July = 20.11 MGD Nov = 20.43 MGD  
 Apr = 24.49 MGD Aug = 20.42 MGD Dec = 20.88 MGD

The yearly average discharge from the city's water customers that have a sewer account with the city, and those serviced by the county's sewer collection system was 22.28 MGD.

### Wastewater Permits

Permit Number	Permitted Capacity (MGD)	Design Capacity (MGD)	Average Annual Daily Discharge (MGD)	Maximum Day Discharge (MGD)	Receiving Stream	Receiving Basin
NC0023841	20.000	20.000	7.910	10.670	Ellerbee Creek	Neuse River (10-1)
NC0047957	20.000	20.000	9.870	11.490	New Hope Creek	Haw River (02-1)

### Wastewater Interconnections

Water System	PWSID	Type	Average Daily Amount		Contract Maximum (MGD)
			MGD	Days Used	
Durham Co. WWTP	03-32-010	Discharging	4.500	365	0.000

## 5. Planning

### Projections

	2007	2010	2020	2030	2040	2050
Year-Round Population	220,000	227,054	257,162	288,271	314,127	329,280
Seasonal Population	0	0	0	0	0	0
Residential	14.940	15.213	17.230	19.314	21.047	22.062
Commercial	5.410	5.487	6.215	6.967	7.592	7.958
Industrial	1.190	1.202	1.362	1.527	1.664	1.744
Institutional	2.790	2.865	3.245	3.637	3.963	4.155
System Process	0.900	0.955	1.082	1.212	1.321	1.385

Unaccounted-for	3.234	2.496	2.827	3.169	3.453	3.619
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**Future Water Sales**

Purchaser	PWSID	MGD	Contract		Pipe Size(s) (Inches)	Use Type
			Year Begin	Year End		
City of Raleigh	03-92-010	0.000	2009		16,24	Emergency

 Demand v/s Percent of Supply

	2007	2010	2020	2030	2040	2050
Surface Water Supply	47.000	47.000	47.000	47.000	47.000	47.000
Ground Water Supply	0.000	0.000	0.000	0.000	0.000	0.000
Purchases	1.750	1.750	1.750	1.750	1.750	1.750
Future Supplies		0.000	0.000	0.000	0.000	0.000
<b>Total Available Supply (MGD)</b>	<b>48.750</b>	<b>48.750</b>	<b>48.750</b>	<b>48.750</b>	<b>48.750</b>	<b>48.750</b>
Service Area Demand	28.464	28.218	31.961	35.826	39.040	40.923
Sales	0.009	0.000	0.000	0.000	0.000	0.000
Future Sales		0.000	0.000	0.000	0.000	0.000
<b>Total Demand (MGD)</b>	<b>28.473</b>	<b>28.218</b>	<b>31.961</b>	<b>35.826</b>	<b>39.040</b>	<b>40.923</b>
Demand as Percent of Supply	58%	58%	66%	73%	80%	84%

What demand management practices do you plan to implement to reduce your future supply needs?

What supplies other than the ones listed in future supplies are being considered to meet your future supply needs?

How does the water system intend to implement the demand management and supply planning components above?

**Additional Information**

Has this system participated in regional water supply or water use planning? **Yes, Efforts include the Triangle J Council of Government's Water Resources Planning Committee, the Triangle Area Water Supply Monitoring Program, the City of Durham Strategic Plan, Jordan Lake Regional Water Agency, the Upper Neuse River Basin Association, Drought Management Advisory Council, Confluence of the Eno and Kerr Water Supply Plan.**

What major water supply reports or studies were used for planning? **City of Durham Water and Sewer Strategic Plan, Jordan Lake Allocation Plan, Teer Quarry Water Supply Plan, Kerr Lake Study and the City of Durham Water System Report.**

Please describe any other needs or issues regarding your water supply sources, any water system deficiencies or needed improvements (storage, treatment, etc.) or your ability to meet present and future water needs. Include both quantity and quality considerations, as well as financial, technical, managerial, permitting, and compliance issues: **Have plans for future interconnection with the City of Raleigh and expansion of the existing interconnection with the Town of Cary.**

The City of Durham Capital Improvement Program includes projects designed to address future needs for the system. These projects include plans to increase the raw water storage capacity with the additional of Teer Quarry, which can provide storage volume of 1.32 to 1.95 billion gallons. Another project will address options to develop an intake on Jordan Lake. The treatment capacity of the system will be increased by addition additional facilities at Brown Water Treatment Plant. Regulatory compliance with LTESWTR and DBP Stage II will be addressed in projects to add ultraviolet disinfection, ozone and other facility improvements.

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