BASIN 7 LITTLE TENNESSEE

BASIN DESCRIPTION

The Little Tennessee Basin is one of six basins in North Carolina that drain the western slope of the Eastern Continental Divide and flow into the Tennessee River System. The basin is divided into the Little Tennessee River and the Tuckasegee River sub-basins. The Little Tennessee River begins in the mountains of the Chattahoochee National Forest in Rabun County, Georgia and flows north into Macon County, NC. The river is impounded by Fontana Dam about seven miles upstream of the Tennessee state line. The Tuckasegee River drains 737 square miles beginning in Jackson County. The river flows northwest then west and merges with the Little Tennessee at Fontana Lake. Fontana Lake is a multipurpose TVA facility with hydropower production and flood control as important benefits. Fontana Dam controls 1571 square miles of the Little Tennessee Basin. Over 85% of the basin is forested.

WATER USE

Factors Affecting Water Demand

This basin is relatively undeveloped. However, there has been significant population growth in communities in the region. Development of the casino on the Cherokee Indian Reservation is expected to expand the already successful tourism industry in the region. This basin is home to about 1% of the state's residents and contains all or part of eight municipalities in six counties. From 1990 to 1997 year-round population in three counties in this basin grew by 10% or more.

Total Water Use in Basin

The U.S. Geological Survey's (USGS) 1995 summary of water use estimated total water use in the basin at 84.5 million gallons per day (mgd), almost exclusively from surface water sources. USGS estimated total basin population at 73,520. Residential demand was estimated at 3.7 mgd with about 37% (1.4 mgd) of this demand being supplied by public water systems. Overall, public water systems supplied 2 mgd of surface water and 0.7 mgd of ground water for both residential and non-residential uses. The remaining residential water demand was met by 2.3 mgd of self-supplied ground water. In addition, about 2.7 mgd of self-supplied water were withdrawn for non-residential water uses.

Local Water Supply Plans (LWSPs)

All units of local government that supply or plan to supply water to the public are required to develop a LWSP. The Division of Water Resources (DWR) reviews LWSPs and maintains a database of the LWSP information.

LWSPs were submitted by seven public water systems having service area in this basin or using water from this basin. These systems supplied 3.6 mgd of water from this basin to 18,397 persons. The following table summarizes the LWSP population served with water from this basin and its water use for 1997.

1997 LWSP System Water Use from Basin (mgd)

Sub-basin	LWSP Population	Residential Use	Non-resid. Use	Total Use*
Little Tennessee R.	10,824	0.67	0.56	2.0
Tuckasegee R.	7,573	0.53	0.60	1.6
Total	18,397	1.2	1.2	3.6

*Total Use also includes unaccounted-for water and system process water.

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For the local plan systems, overall water use was divided about equally between residential use, non-residential use and unaccounted-for water.

LWSP systems expect to supply water to 35,886 persons by the year 2020, a 95% increase over 1997 levels. Their demand for water is projected to grow 114% to 7.7 mgd by 2020.

In the 1997 LWSPs, two of the seven systems using water from this basin reported that their peak demands will exceed their water treatment capacity by 2010.

Water systems should maintain adequate water supplies and manage water demands to ensure that average daily use does not exceed 80% of their available supply. Data for 1997 indicated that none of the seven LWSP systems in this basin had average demand above this threshold and none of the systems project demand levels that will exceed this threshold by 2020.

Self-supplied Use

The USGS estimated that self-supplied users, excluding power generating facilities, accounted for five mgd of the 84.5 mgd total of water used from this basin, as shown in the table below. Domestic use comprised 47% of the self-supplied uses, followed by irrigation (37%), commercial (7%), livestock (6%), and industrial (4%).

1995 USGS Estimated Self-supplied Water Use in mgd

Sub-basin	Domestic	Livestock	Industrial	Commercial	Irrigation	Total
Little Tennessee	1.23	0.23	0.19	0.13	1.42	3.2
Tuckasegee R.	1.11	0.06	0.00	0.21	0.45	1.8
Basin Total	2.3	0.3	0.2	0.3	1.9	5.0

Registered Water Withdrawals

Anyone withdrawing 1.0 mgd or more of surface or ground water for agricultural uses or 100,000 gallons per day for other uses is required to registered that withdrawal with DWR. Registered withdrawals in this basin are summarized in the table below.

Registered Water Withdrawals for 1999

Sub-basin	Agricultural		Non-agricultural		Total	
	#	mgd	#	mgd	#	mgd
Little Tennessee River	3	3.42	4	0.719	7	4.139
Tuckasegee River	4	0.94	2	0.047	6	0.987
Total	7	4.36	6	0.766	13	5.126

*Excludes water use for power generation.

The seven registered agricultural users listed above are aquaculture operations. The registered non-agricultural water users include three mining operations and three private water supply systems.

WATER AVAILABILITY

Surface water is the primary source of water for most of the residents supplied by a LWSP system. LWSPs indicate that five water systems in these sub-basins withdraw about 3.5 mgd of surface water. These systems have run-of-river intakes and an available supply of about 22 mgd.

There are two systems in this basin using ground water. They have an available supply of 0.26 mgd of ground water based on the 12-hour yields supplied in their LWSPs.

INTERBASIN TRANSFERS OF SURFACE WATER

Across the state many water users and systems move water between sub-basins to meet their needs. Regulatory approval is generally needed for transfers of 2.0 mgd or more. The table below summarizes the identified interbasin transfers in 1997 associated with this basin.

Estimated Interbasin Transfers based on 1997 data

Sub-basin	Number	mgd OUT	mgd IN
Little Tennessee River	1	0.1	0
Tuckasegee River	0	0	0

The Town of Highlands straddles the Little Tennessee and Savannah River basins, resulting in a minor transfer estimated to be 0.1 mgd. Otherwise, there are no interbasin transfers associated with this basin.

SUMMARY OF INFORMATION FROM 1997 LWSPs

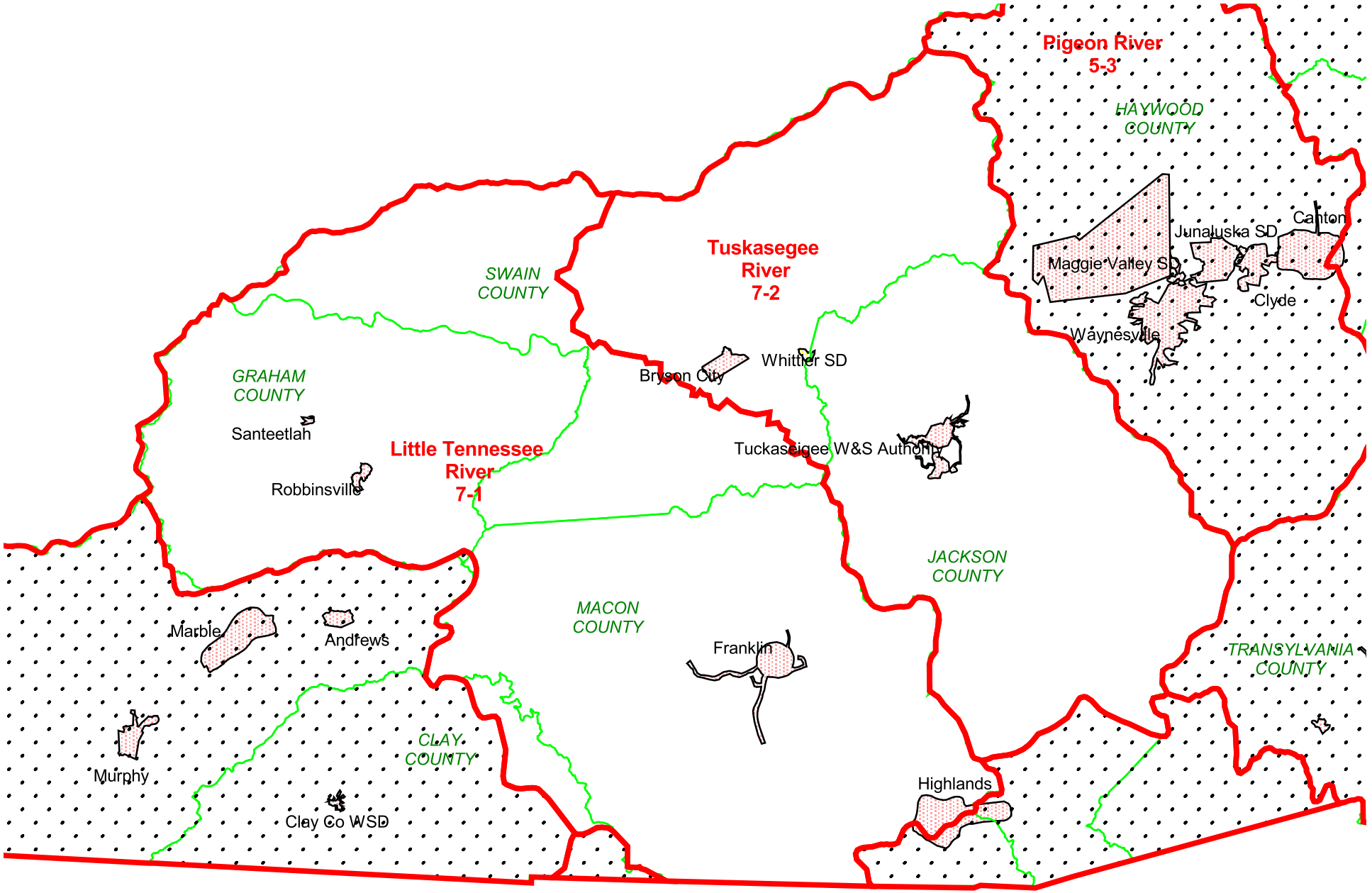
! Total per capita water use for the basin was 194 gallons per day (gpd) in 1997 and is projected to increase to 218 gpd by 2010.

! None of the seven systems in this basin are connected to another water supply system capable of providing water in an emergency.

! The reported raw water supply was 22 mgd surface water and a 12-hour ground water supply of 0.26 mgd.

! Three systems were planning additional supplies totaling about two mgd in 1997 LWSPs.

! None of the seven LWSP systems in the basin project demands greater than 80% of available supply through the 2020 planning period.



Basin 7 Little Tennessee River

(unshaded basin)

LWSP service area | County Boundary | Basin Boundary

LITTLE TENNESSEE RIVER BASIN (7)

1997 and 2010 Population and Water Use as reported by LWSP systems using water from this basin.

Water systems showing "Demand as % of Supply" above 80% should be actively managing demand and pursuing additional supplies. **mgd = million gallons per day**

		Year-round Service Population		Average Daily Demand (mgd)		Available Supply (mgd)		Demand as % of Supply	
Water Systems by County	**Water Source or Supplier**	**1997**	**2010**	**1997**	**2010**	**1997**	**2010**	**1997**	**2010**
GRAHAM									
ROBBINSVILLE	Talula Cr./Rock Cr./Long Cr./Burgen Cr.	2618	2684	0.417	0.435	1.1	1.1	38%	40%
SANTEETLAH	Bedrock Wells	32	36	0.021	0.024	0.118	0.147	18%	17%
JACKSON									
TUCKASEIGEE WSA	Tuckasegee River / WESTERN CAROLINA UNIV.	4950	10827	0.836	0.746	15	15	6%	12%
MACON									
FRANKLIN	Cartoogechaye Creek	7125	8500	1.044	1.616	3.1	3.1	34%	52%
HIGHLANDS	Big Creek	1049	1233	0.514	1.074	1	2	51%	54%
SWAIN									
BRYSON CITY	Deep Creek	2448	2576	0.72	0.759	2	2	36%	38%
WHITTIER SD	Bedrock Wells	175	198	0.035	0.038	0.144	0.144	24%	26%