

ARCADIS

**Northwest Georgia
Regional Wastewater
Treatment Study**

Appendix A

Delineation of Subbasins and
Census Sub-Tracts and
Apportioning of Year 2000
Population to Subbasins

Subbasin and Census Sub-Tract Delineation and Apportionment of Year 2000 Population

In general, the study area for this report covers all parts of North Georgia that naturally drain into the Tennessee River upstream of the Moccasin Bend Wastewater Treatment Plant (MBWWTP) in Chattanooga, Tennessee, owned and operated by the City of Chattanooga. These areas are located in Catoosa County and parts of Whitfield County, Walker County, and Dade County. In addition, for informational purposes, the study area also includes the Dade County, Georgia, portions of Sand Mountain, which actually drain into the Tennessee River at points downstream of Chattanooga. This overall study area is further subdivided into natural drainage subbasins, each delineated using topographical mapping published and distributed by the United States Geological Survey (USGS) and available in a number of formats and at a variety of scales. This information was augmented by additional data available locally as well as on-site observations by ARCADIS staff.

This report serves as a partial update of the original 201 study. The drainage basin and subbasin delineations, computation of areas (in both square-miles and acres), current and projected population data, and subsequent population densities that are used in wastewater planning are generally based on the delineations and order of the subbasins found in the original 201 study (p.54-82). This appendix serves to provide a detailed description of the subbasin boundaries, census sub-tracts, other data criteria, area and population analysis methodologies, and the resulting framework for the report. This information can be seen in tabular form in Exhibit A.1 and graphically in Exhibit A.2.

Study Area Drainage Subbasins

The study area consists of 11 topographically defined natural drainage subbasins:

- Hurricane Creek
- Tiger Creek
- East Chickamauga Creek
- Little Chickamauga Creek
- South Chickamauga Creek
- Peavine Creek
- Spring Creek
- West Chickamauga Creek
- Dry Creek
- Chattanooga Creek
- Lookout Creek

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Discrete Drainage Sub-basins and Parent Census Tract Subdivisions	% of Parent Area	Parent Tract Area* (sq. mi.)	Sub-tract Area (sq. mi.)	201 Study-Reported 1970 Pop.**	Calculated Basin 1970 Pop.Density	201 Study-Projected 2000 Pop.**	% of Parent 2000 Pop.*	Total Parent Tract 2000 Pop.*	Sub-tract and Basin 2000 Pop.*	Calculated Basin 2000 Pop. Density*
Hurricane Creek (Catoosa)										
302.00N	25%	19.02	4.76			1,071	25%	8,607	2,152	
			4.76	604	127/sq.mi.	1,071			2,152	453/sq.mi.
Tiger Creek (Catoosa/Whitfield)										
001.02W	40%	27.73	11.09			-	20%	6,314	1,263	
301.00E	50%	56.72	28.36			3,054	50%	6,448	3,224	
			39.45	1,612	41/sq.mi.	3,054			4,487	114/sq.mi.
East Chickamauga Creek (Catoosa/Whitfield)										
005.01N	15%	10.98	1.65			-	5%	2,958	148	
006.00W	75%	8.89	6.67			-	90%	3,950	3,555	
007.00	100%	36.78	36.78			-	100%	3,670	3,670	
301.00S	40%	56.72	22.69			1,273	40%	6,448	2,579	
			67.78	676	10/sq.mi.	1,273			9,952	147/sq.mi.
Little Chickamauga Creek (Catoosa)										
303.00E	70%	37.41	26.19			2,550	60%	11,307	6,784	
			26.19	1,725	66/sq.mi.	2,550			6,784	259/sq.mi.
South Chickamauga Creek (Catoosa)										
302.00E	70%	19.02	13.31			8,145	70%	8,607	6,025	
303.00N	5%	37.41	1.87			-	10%	11,307	1,131	
			15.18	4,799	316/sq.mi.	8,145			7,156	471/sq.mi.
Peavine Creek (Catoosa)										
302.00W	5%	19.02	0.95			-	5%	8,607	430	
303.00W	25%	37.41	9.35			-	30%	11,307	3,392	
304.01E	50%	23.01	11.51			5,091	50%	5,752	2,876	
304.02E	60%	8.34	5.00			-	60%	5,690	3,414	
			26.81	4,420	165/sq.mi.	7,594			10,112	377/sq.mi.
Spring Creek (Catoosa/Walker)										
201.00N	40%	6.93	2.77			10,285	50%	6,652	3,326	
305.00W	60%	3.68	2.21			-	60%	4,118	2,471	
306.00	100%	2.52	2.52			24,179	100%	5,205	5,205	
307.00W	25%	11.52	2.88			-	75%	6,155	4,616	
			10.38	18,769	1,808/sq.mi.	31,964			15,618	1,505/sq.mi.
West Chickamauga Creek (Catoosa)										
304.01W	50%	23.01	11.51			-	50%	5,752	2,876	
304.02W	40%	8.34	3.34			-	40%	5,690	2,276	
305.00E	40%	3.68	1.47			-	40%	4,118	1,647	
307.00E	75%	11.52	8.64			-	25%	6,155	1,539	
			24.95	2,486	100/sq.mi.	6,364			8,338	334/sq.mi.
West Chickamauga Creek, Etc. (Walker)										
203.02E	20%	9.56	1.91			-	20%	5,647	1,129	
205.01	100%	12.22	12.22			-	100%	6,827	6,827	
205.02E	65%	32.99	21.44			-	50%	5,592	2,796	
206.01E	10%	26.57	2.66			-	5%	4,553	228	
206.01N	40%	26.57	10.63			2,503	65%	4,553	2,959	
206.01W	40%	26.57	10.63			-	40%	4,553	1,821	
206.02E	50%	30.41	15.21			-	15%	3,607	541	
208.00	100%	128.62	128.62			-	100%	3,015	3,015	
			203.31	12,110	60/sq.mi.	20,315			19,317	95/sq.mi.
Dry Creek (Walker)										
201.00S	20%	6.93	1.39			-	15%	6,652	998	
201.00W	40%	6.93	2.77			-	35%	6,652	2,328	
202.00	100%	2.15	2.15			-	100%	3,630	3,630	
203.01E	40%	9.43	3.77			-	60%	4,822	2,893	
203.02N	20%	9.56	1.91			-	20%	5,647	1,129	
			7.83	7,435	949/sq.mi.	10,566			10,979	1401/sq.mi.
Chattanooga Creek (Walker)										
203.01W	60%	9.43	5.66			-	40%	4,822	1,929	
203.02W	60%	9.56	5.74			-	60%	5,647	3,388	
204.00N	85%	25.76	21.90			-	95%	2,920	2,774	
205.02W	35%	32.99	11.55			-	50%	5,592	2,796	
			44.84	9,683	216/sq.mi.	13,166			10,887	243/sq.mi.
Lookout Creek (Dade)										
204.00S	15%	25.76	3.86			163	5%	2,920	146	
401.00E	95%	94.34	89.62			-	100%	7,784	7,784	
402.00N	20%	39.55	7.91			438	40%	4,086	1,634	
402.00S	80%	39.55	31.64			-	60%	4,086	2,452	
			133.04	7,211	54/sq.mi.	9,573			12,016	90/sq.mi.
Other Dade Areas										
401.00W	5%	94.34	4.72			-	0%	7,784	0	
403.00E	10%	40.09	4.01			-	10%	3,284	328	
403.00N	50%	40.09	20.05			-	50%	3,284	1,642	
403.00S	40%	40.09	16.04			-	40%	3,284	1,314	
			44.81						3,284	73/sq.mi.
Totals			649.33	71,787	111/sq.mi.	115,635			121,081	186/sq.mi.

* 2000 U.S. Census Bureau

** May 1975 Chattanooga, TN-GA 201 Wastewater Facilities Plan (Volume 1 Base Data)

December 30, 2003

Most of these subbasins eventually flow north into Tennessee. Some are actually subsets of larger drainage subbasins drained by primary tributaries of the Tennessee River. There are three such primary tributaries within the study area for this report: South Chickamauga Creek, Chattanooga Creek, and Lookout Creek.

Most of the drainage subbasins in this report feed tributaries of South Chickamauga Creek. East Chickamauga Creek is joined by Tiger Creek just south of Ringgold, Georgia, to become South Chickamauga Creek. It is then joined by Little Chickamauga Creek, Hurricane Creek, and Peavine Creek before entering Tennessee. Spring Creek joins West Chickamauga Creek just before it enters Tennessee to later also join with South Chickamauga Creek. South Chickamauga Creek empties into the Tennessee River at Mile 468.2. Chattanooga Creek is joined by Dry Creek after both cross the Tennessee state line and Chattanooga Creek empties into the Tennessee River at Mile 460.6. Lookout Creek, a stream course with no major component tributaries, empties into the Tennessee River at Mile 459.8.

Areas of Dade County that do not naturally drain into the Tennessee River at Chattanooga have been designated as the equivalent of another subbasin. Additionally, the West Chickamauga Creek Subbasin has been subdivided by county (i.e., areas in Catoosa County are addressed separately from areas in Walker County). The result is 13 discrete drainage subbasins for proposal of this report.

Census Tract Subdivisions

Area, population, and other information available from the United States Census Bureau (USCB) are organized by state, county, census tract, and other criteria. Unfortunately, the boundaries of these USCB-defined census tracts rarely coincide with natural drainage subbasin limits. In cases where census tracts were subdivided by drainage subbasin limits, a suffix was added, designating a north (N), east (E), south (S), or west (W) partition. When the area of a "parent" census tract is shared between two or more drainage subbasins, a rounded estimate of the portion of each parent census tract area within each drainage subbasin was made for the purpose of allocating both existing and projected population assigned to each drainage subbasin. These area and population assignments became the starting point for population density analyses. The 13 discrete drainage subbasins have thus been further subdivided into a total of 47 discrete census sub-tracts in order to better facilitate further data analysis.

Population densities are not always uniform throughout a given census tract. In some situations where a parent census tract has been subdivided, observable data may indicate a disproportionate share of the parent census tract population was located in one (or more) of its subdivisions. When this appears to be the case, a rounded estimate

has been made. Details of this subdividing process are shown in Exhibit A.1 and Exhibit A.2. Each of the 13 study-area drainage subbasin is listed in sequence and each census sub-tract area is shown within its subbasin. Each of the listed census sub-tracts is defined by both the percentage of its parent census tract area and the percentage of its parent census tract population. The total area and population of each parent census tract and the resulting area and population of each census sub-tract are also indicated, as well as the calculated population densities that result when the population figures are divided into the appropriate areas.

For comparison purposes, and where data is available, the 1970 population figures (and calculated densities) from the original 201 study have been included, as well as the 201 study projected Year 2000 population figures. This way the impact of study area population changes between 1970 and 2000 can better be observed.

Hurricane Creek Subbasin

Hurricane Creek empties into South Chickamauga Creek just above Graysville, Georgia, near one of many bridges on the old Western & Atlantic rail line. Most of the area drained by Hurricane Creek is located in Hamilton County, Tennessee, but these areas were not included in any calculations contained in this report. Year 2000 population projections in the original 201 study (p.54-56) for the 17.90-square-mile (11,456-acre) subbasin indicated an expected density of 59.8 per square mile (although less than 5 square miles of it was located in Georgia), and 100 percent build-out population density was expected to be 170 per square mile. Year 2000 census data indicates the total area is actually 19.02 square miles (12,173 acres) in size and the population density was 453 per square mile, far in excess of the projected 100 percent. Two areas are currently served by sanitary sewer systems, both of which pump wastewater ultimately to the Chattanooga Interceptor Sewer System (ISS) for treatment at MBWWTP.

Tract	1970	1980	1990	2000	2010	2020	"100%"
302.00N	604	762	910	1,071	1,311	1,606	3,054

Tiger Creek Subbasin

The Tiger Creek Subbasin covers a large two-state, four-county area, reaching as far northeast as Bradley County, Tennessee, adjacent to the Conasauga River Basin and along the Tennessee Valley Divide. Tiger Creek combines with East Chickamauga Creek to form South Chickamauga Creek just east of Ringgold Gap. Since Cherokee Branch enters at this same point, the Cherokee Valley area is included as part of the Tiger Creek Subbasin. Tiger Creek drains the Salem Valley and Keith areas and

includes a substantial part of Whitfield County. Also within this subbasin is the 1,625-acre Catoosa Rifle Range, a military training facility owned by the U.S. government and currently operated by the Tennessee National Guard. Year 2000 population projections in the original 201 study (p.56-58) for the 35.23-square-mile (22,545-acre) subbasin indicated an anticipated density of 86.7 per square mile, with a projected 100 percent build-out population density of approximately 320 per square mile. Year 2000 census data indicates the total area is actually 39.45 square miles (25,248 acres) in size and the population density was approximately 114 per square mile.

Tract	1970	1980	1990	2000	2010	2020	"100%"
112.00S	257	337	442	546	577	839	8,367
301.00N	1,612	2,205	2,657	3,054	3,787	4,696	11,242
Total	1,869	2,542	3,099	3,600	4,464	5,535	19,659

East Chickamauga Creek Subbasin

The East Chickamauga Creek begins in the vicinity of the Walker County-Whitfield County line adjacent to the Armuchee Creek Basin along the Tennessee Valley Divide. A substantial portion of western Whitfield County drains into this subbasin, including Dogwood Valley, Mt Vernon, the areas around the City of Tunnel Hill, and the valleys surrounding the I-75 Exit 341. The stream courses that empty into the East Chickamauga Creek Subbasin are Hopkins Creek, Mt Vernon Creek and Tanyard Creek. This subbasin is bordered on the west by the crest of Taylor Ridge to the point near Ringgold Gap, where East Chickamauga Creek combines with Tiger Creek to form South Chickamauga Creek. Included within the upper reaches of this subbasin are two large reserved areas of the Chattahoochee National Forest in Whitfield County. The original 201 study (p.58-60) indicated an area of 21.49 square miles (13,751 acres) for the East Chickamauga Creek Subbasin. Year 2000 population projections indicate an anticipated population density of 59.2 per square mile, with a 100 percent build-out density of approximately 310 per square mile. Year 2000 census data indicates the total area is actually 67.78 square miles (43,379 acres) in size and the population density was approximately 147 per square mile.

Tract	1970	1980	1990	2000	2010	2020	"100%"
301.00S	676	919	1107	1273	1321	1577	6600

Little Chickamauga Creek Subbasin (Catoosa County)

The Little Chickamauga Creek Subbasin is a narrow, clearly defined basin that begins in Walker County adjacent to the Chattooga River Basin along the Tennessee River Divide and flows north to the point where the Little Chickamauga Creek empties into the South Chickamauga Creek at Ringgold, Georgia. The subbasin is bordered on the east by Taylor Ridge and on the west by Peavine Ridge. For purposes of this study, the Walker County portion is included elsewhere in this report. Year 2000 population projections from the 201 study (p.61-63) for the 48.79-square-mile (31,231-acre) subbasin indicated an anticipated density of 52.3 per square mile, with a 100 percent build-out density of approximately 86 per acre. Year 2000 census data indicates the total area is actually 26.19 square miles (16,762 acres) in size and the population density was approximately 259 per square mile, far in excess of the projected 100 percent.

Tract	1970	1980	1990	2000	2010	2020	"100%"
303.00E	1,725	1,986	2,283	2,550	3,901	3,301	4,212

South Chickamauga Creek (Georgia) Subbasin

The Georgia portion of the South Chickamauga Creek subbasin includes areas around the city of Ringgold, as well as most areas north of the city. The subbasin is bordered on the east by White Oak Mountain and on the west by Peavine Ridge to Graysville, Georgia. This subbasin is fed from the east by South Chickamauga Creek, from the south by Little Chickamauga Creek, and includes such tributaries as Peters Branch and Kettle Branch. Year 2000 population projections from the original 201 study (p.79-82) for the 13.31-square-mile (8,518-acre) subbasin indicate an anticipated density of 611.9 per square mile, with a 100 percent build-out density of almost 1,900 per acre. Year 2000 census data indicates the area is actually 15.18 square miles (9,715 acres) in size and the population density was approximately 471 per square mile, less than was projected. Ringgold provides the only sanitary sewer service in this subbasin, discharging treated effluent into South Chickamauga Creek, but plans are underway to connect this area to the ISS and MBWWTP via the Ringgold Pump Station and Force Main.

Tract:	1970	1980	1990	2000	2010	2020	"100%"
302.00E	4,799	5,878	7,085	8,145	8,686	9,190	25,272

Peavine Creek Subbasin

The Peavine Creek Subbasin is a narrow, clearly defined basin that begins in Walker County adjacent to the Chattooga River Basin along the Tennessee River Divide and flows north to the point where Peavine Creek empties into the South Chickamauga Creek east of Graysville, near the Tennessee-Georgia state line. It is bordered on the east by Peavine Ridge and on the west by Boynton Ridge. For purposes of this study, the Walker County portion is included elsewhere in this report. Year 2000 population projections from the 201 study (p.62-64) for the 34.12-square-mile (21,837-acre) subbasin indicated an anticipated density of 222.6 per square mile. Year 2000 census data indicates the total area is actually 26.81 square miles (17,158 acres) in size and the population density was approximately 377 per square miles. Sanitary sewer service has been provided to substantial areas of this subbasin via the Peavine Creek Interceptor, which is connected to the ISS and MBWWTP.

Tract	1970	1980	1990	2000	2010	2020	"100%"
304.01E	2,714	3,674	4,428	5,091	6,108	7,330	22,496
206.01N	1,706	2,166	2,339	2,503	3,004	3,604	*
Total	4,420	5,840	6,767	7,594	9,112	10,934	*

*Not calculated

Spring Creek (Georgia) Subbasin

The Georgia portion of the Spring Creek Subbasin is a compact area adjacent to the Tennessee-Georgia state line. Spring Creek flows north through East Ridge, Tennessee, to empty into West Chickamauga Creek near its confluence with South Chickamauga Creek. This subbasin is bisected east-west by Georgia SR 2 and north-south by US 27. It is bordered on the east by the Catoosa County portion of the West Chickamauga Creek Subbasin and on the west by Missionary Ridge. The lower portion of this subbasin is within the reserved areas of the Chickamauga and Chattanooga National Military Park. For purposes of this study, the southwest corner of the Walker County portion of this subbasin is included elsewhere in this report. Year 2000 population projections from the 201 study (p.65-67) for the 14.54-square-mile (9,310-acre) subbasin indicate an anticipated density of 2,370.3 per square mile, with a 100 percent build-out density of approximately 4,150 per acre. Year 2000 census data indicates the total area is actually 10.38 square miles (6,643 acres) in size and the population density was approximately 1,505 per square mile. While the highest density subbasin within the study area, it is both much lower than projected and even less than its 1970 density of 1,808 per square mile. Capacity has been provided for ample sanitary sewer service in all parts of this subbasin by means of the NorthWest Georgia Interceptor, which is a

part of the ISS and is connected to MBWWTP. The City of Fort Oglethorpe provides actual sanitary sewer service throughout the Catoosa County portion of this subbasin and the Walker County Water and Sewer Authority provides limited service in the Walker County portion. Plans in both counties include aggressive measures to extend sanitary sewer service to all parts of this subbasin not currently served.

Tract:	1970	1980	1990	2000	2010	2020	"100%"
Catoosa	13,330	17,450	21,033	24,179	27,562	31,050	36,845
Walker	6,939	8,449	9,417	10,285	11,015	11,790	23,510
Total	20,269	25,899	30,450	34,464	38,577	42,840	60,355

West Chickamauga Creek (Catoosa County) Subbasin

The Catoosa County portion of the West Chickamauga Creek Subbasin is bounded on the east by Boynton Ridge, on the south by the Walker County line and on the west by the Spring Creek Subbasin. The West Chickamauga Creek flows north through East Ridge, Tennessee, and after being met by Spring Creek, empties into South Chickamauga Creek. A portion of this subbasin is within the reserved areas of the Chickamauga and Chattanooga National Military Park. For purposes of this study, the Walker County portion of this subbasin has been addressed separately. Year 2000 population projections from the 201 study (p.68-71) for the 24.95-square-mile (15,968 acre) subbasin indicate an anticipated density of 255.1 per square mile, with a 100 percent build-out density of 1,113.9 per square mile. Year 2000 census data indicates the population density was 334 per square mile, substantially more than what had been projected. Limited pockets of sanitary sewer service are provided within this subbasin, but plans are underway for a West Chickamauga Creek Interceptor that would connect with the ISS and MBWWTP and enable the provision of more extensive sanitary sewer service in this subbasin.

Tract	1970	1980	1990	2000	2010	2020	"100%"
Catoosa	2,486	3,592	4,535	6,364	6,540	7,012	28,290

West Chickamauga Creek, Etc., (Walker County) Subbasin

The Walker County portion of the West Chickamauga Creek Subbasin is bounded on the north and east by the Catoosa County Line and Boynton Ridge, on the south by the Chattooga River basin along the crest of Pigeon Mountain and on the Tennessee River Divide and on the west by the East Brow of Lookout Mountain and the Chattanooga Creek Subbasin along the southern reaches of Missionary Ridge. West Chickamauga Creek flows north from this large Walker County subbasin on through Catoosa County

and into East Ridge, Tennessee, on the Tennessee-Georgia state line after which it is joined by Spring Creek and then itself joins with South Chickamauga Creek and continues north. A part of this subbasin is within the reservation of the Chickamauga and Chattanooga National Military Park. For purposes of this study, not only is the Walker County portion of the Georgia part of this subbasin being addressed separately from the Catoosa County portion, but portions of two other subbasins are also included. The Walker County portions of the upper reaches of both the Little Chickamauga Creek Subbasin and the Peavine Creek Subbasin are being studied in combination with the Walker County portion of the West Chickamauga Creek Subbasin to reflect the strategy of providing wastewater treatment services to these areas via the existing Chickamauga WWTP, located on the West Chickamauga Creek in Chickamauga, owned, operated, and maintained by the Walker County Water and Sewer Authority (WCWSA) as is already being done.

Year 2000 population projections from the 201 study (p.61-64, 68-71) for this combined 175.51-square-mile (112,326-acre) mega-subbasin indicated an anticipated density of 94.2 per square mile, with a 100 percent build-out density of approximately 381 per square mile. Actual year 2000 census data indicates the total aggregate area is 203.31 square miles (130,118 acres) in size and the population density was approximately 95 per square mile, almost exactly what had been projected. Sanitary sewer service is now being provided in a number of far-off places throughout this mega-subbasin, from Wallaceville, Rock Spring, and Chickamauga to Marble Top Road south and US 27 south of Noble. Limited areas of the Walker County portion of the Peavine Creek Subbasin already have sanitary sewer service and plans are underway to expand the system even further southward in the West Chickamauga Creek Subbasin toward the Kensington area and beyond. All wastewater collected within the served area of this mega-subbasin is transported to the Chickamauga WWTP and plans are to continue this strategy into the foreseeable future until the point where further expansions of this facility are no longer economically feasible. When this point has been reached, plans call for an eventual connection of this subbasin to the ISS and MBWWTP.

Tract:	1970	1980	1990	2000	2010	2020	"100%"
Walker	12,110	13,753	15,200	16,523	18,542	20,803	66,870

Dry Creek Subbasin

The Dry Creek Subbasin is bounded on the east by Missionary Ridge and on the west by the Chattanooga Creek Subbasin. Dry Creek joins Chattanooga Creek just north of the Tennessee-Georgia state line. Although addressed in the 201 study as a part of the Chattanooga Creek Subbasin, for purposes of this study, the Dry Creek Subbasin is addressed separately. Consequently, year 2000 population projections from the 201 study (p.68-71) for this 7.83-square-mile (5,011-acre) area did not lend themselves readily to numerical segregation; however, year 2000 census data indicates the population density was 1,401 per square mile, among the highest in the study area. Sanitary sewer service is now provided by two agencies throughout most of this subbasin. The City of Rossville has long provided service connected to the ISS and MBWWTP. Over recent decades the WCWSA has also expanded service to many of the remaining parts of this subbasin and these areas are also connected to the ISS and MBWWTP. Plans call for ultimately providing service to all developed areas of the subbasin not already served.

Chattanooga Creek Subbasin

The Georgia portion of the Chattanooga Creek Subbasin is bounded on the east by the Dry Creek Subbasin and West Chickamauga Creek Subbasin along the southern crest of Missionary Ridge, on the south in an irregular line up and onto Lookout Mountain, and on the west along the West Brow of Lookout Mountain, primarily in Dade County. Although the Dry Creek Subbasin and Dade County portions of the Chattanooga Creek Subbasin were included in the original 201 study area, for purposes of this study, all Dade County portions of this subbasin are included in the Lookout Creek Subbasin, and the Dry Creek Subbasin has been addressed separately. A substantial portion of this remaining area of the Chattanooga Creek Subbasin is encompassed of lands reserved by the Lula Lake Land Trust. Part of the rationale for excluding Dade County portions of this subbasin from remainder is the way in which the Land Trust properties isolate the developing West Brow areas from existing points of service in Chattanooga Valley.

As the Chattanooga Creek meanders north through this subbasin, it is joined by Rock Creek and numerous smaller tributaries, before crossing the Tennessee-Georgia state line and to be joined by Dry Creek. Year 2000 population projections from the 201 study (p.68-71) for the total 52.61-square-mile (33,670 acre) subbasin indicated an anticipated density of 403.5 per square mile, with the 100 percent build-out density of approximately 1,327 per square mile. Year 2000 census data indicates the subbasin area for this study is 44.84 square miles (28,698 acres) and had a population density was 243 per square mile, substantially less than what had been projected. The two

areas currently provided with sanitary sewer service are valley areas from south Flintstone north to the state line owned and operated by the WCWSA and a municipal low-pressure system in the City of Lookout Mountain (Georgia) and a few limited areas around it, owned and operated by the City. Both of these areas are connected to the ISS and MBWWTP. Further extensions of the Chattanooga Valley system are now in the planning stages with plans to eventually serve all developed areas there.

Tract	1970	1980	1990	2000	2010	2020	"100%"
Walker	15,332	17,081	19,034	20,788	22,100	23,950	67,710
Dade	286	332	384	438	560	683	2,106
Total	15,618	17,413	19,418	21,226	22,660	24,633	69,816

Lookout Creek Subbasin

The Lookout Creek Subbasin encompasses the bulk of Dade County, draining areas to the south as far as Valley Head in DeKalb County, Alabama, as well as parts of the Lookout Mountain plateau through Lookout Valley into the Tennessee River. Lookout Creek is a primary tributary with a number of smaller named and unnamed tributaries located in Dade County. The Lookout Creek Subbasin is bounded on the east by the West Brow of Lookout Mountain, and crossing over the mountain near Durham, the eastern edge follows the East Brow of Lookout Mountain above Cooper Heights and Cedar Grove before returning to the West Brow south of Cloverdale along which it continues south into Alabama. The western boundary of the subbasin follows the eastern brow of Sand Mountain from Slygo Valley south into Alabama. In this northeastern part of this subbasin, a unit of the Chickamauga and Chattanooga National Military Park is reserved, and in the middle part of this subbasin, a large area is reserved for the Cloudland Canyon State Park and properties held by the Trust for Public Lands.

For purposes of this study, the Lookout Creek Subbasin also includes the Dade County portions of the Chattanooga Creek Subbasin, along the West Brow of Lookout Mountain. Year 2000 population projections from the original 201 study (p.75-78) for the 125.12-square-mile (80,077 acre) subbasin indicated an anticipated density of 76.5 per square mile with a 100 percent build-out density of 132 per square mile. Year 2000 census data indicates the total area for this redefined subbasin is actually 133.04 square miles (85,146 acres) in size and the population density was approximately 90 per square mile. Currently, the only sanitary sewer service that is provided in this subbasin is in the Trenton, Georgia, area and limited areas surrounding it with wastewater treated at the Trenton WWTP. Construction is underway for the Dade County Water

and Sewer Authority on a gravity interceptor sewer, pump station and force main to provide service in the north end of the valley connected to the ISS and MBWWTP.

Tract	1970	1980	1990	2000	2010	2020	"100%"
Walker	125	134	149	163	178	194	270
Dade	7,086	8,205	8,995	9,410	10,257	11,179	16,260
Total	7,211	8,339	9,144	9,573	10,435	11,373	16,530

Other Dade County Areas

Not included within the 201 study area and not flowing into the Tennessee River at Chattanooga or above the Moccasin Bend Wastewater Treatment Plant are the Dade County parts of Sand Mountain included here for informational purposes only.

ARCADIS

**Northwest Georgia
Regional Wastewater
Treatment Study**

Appendix B

Particular Wastewater Issues of
Concern

Particular Wastewater Issues of Concern

In addition to population changes and demographics trends since the publication of the original 201 study in 1975, a number of other particular wastewater issues of concern were addressed in the 201 study and raised by representatives of local and state agencies during the process of information gathering for this study. The current status of the specific non-industrial wastewater systems identified in the 201 study are addressed here as well as discharges permitted by the Environmental Protection Division of the Georgia Department of Natural Resources. Additional discharge points of concern are also listed for informational purposes.

Non-Industrial Systems within Study Area

201 Study

The non-industrial-source wastewater treatment systems identified in the 201 study are located on Exhibit B.1 and listed in Exhibit B.2 with an update on their current status.

EXHIBIT B.2 Non-Industrial Wastewater Treatment Systems Status Update		
Non-Industrial Source Wastewater Treatment Systems	Still of Concern	Current Status of Service
Chattanooga Valley Elementary School (500 students) (Walker County)		Sanitary sewers connected to ISS/MBWWTP
Chattanooga Valley Middle School (700 students) (Walker County)		Sanitary sewers connected to ISS/MBWWTP
Rock City Gardens (Walker County)		Sanitary sewers connected to ISS/MBWWTP
Yates Bleachery (Walker County)		Sanitary sewers connected to ISS/MBWWTP
Covenant College (Dade County)		Sanitary sewers connected to ISS/MBWWTP via Lookout Mountain (Walker County)
Flintstone Subdivision (Dade County)		Sanitary sewers connected ISS/MBWWTP via Lookout Mountain (Walker County)
Fast Petroleum at I-24 Exit 169 (Dade County)	✓	Currently treating wastewater on-site; however, construction to connect to ISS/MBWWTP is under way
Trenton WasteWater Treatment Plant (Dade County)	✓	Operating at 1.0 MGD permitted capacity with discharge of treated effluent to Lookout Creek
Wildwood Lifestyle Center and Hospital at I-24 Exit 169 (Dade County)	✓	Currently treating wastewater on-site; however construction to connect to ISS/MBWWTP is now under way

EXHIBIT B.2 Non-Industrial Wastewater Treatment Systems Status Update		
Non-Industrial Source Wastewater Treatment Systems	Still of Concern	Current Status of Service
Morris Estates Residential Subdivision (Catoosa County)	✓	Treating wastewater in oxidation pond with effluent discharged into South Chickamauga Creek; however sanitary sewer is available to connect to ISS/MBWWTP
Ringgold Wastewater Treatment Plant (Catoosa County)	✓	Operating at permitted capacity of .75 MGD with discharge of treated effluent into South Chickamauga Creek; plans in progress to abandon the facility and transport wastewater directly to ISS/MBWWTP
Sherwood Forest Mobile Home Park (Catoosa County)	✓	Sanitary sewer connected to on-site oxidation pond that appears to be operating poorly; but sanitary sewer is available nearby to enable connection to ISS/MBWWTP
Golden Gallon at I-75 Exit 345 (Catoosa County)	✓	On-site wastewater treatment system with effluent discharged into nearby tributary of East Chickamauga Creek
Cochran's Truck Stop at I-75 Exit 345 (Catoosa County)	✓	On-site wastewater treatment system with effluent discharged into nearby tributary of East Chickamauga Creek
Shaw Industries and Rollins Industrial Park (Catoosa County)		Sanitary sewers connected to Ringgold Wastewater Treatment Plant, which is to be abandoned and connected to ISS/MBWWTP
Boynton Elementary School (550 Students) (Catoosa County)		Sanitary sewers tied to ISS/MBWWTP
Knights Inn (Catoosa County)	✓	On-site wastewater treatment with discharge of treated effluent pumped into tributary of Peavine Creek
Georgia Welcome Center on I-75 (expanded) (Catoosa County)		Sanitary sewers connected to ISS/MBWWTP
Archer Division, E.T. Barwick Industries, Inc. (Walker County)	✓	On-site wastewater treatment with discharge of treated effluent into West Chickamauga Creek; plans way to connect to Chickamauga WWTP
Chickamauga Wastewater Treatment Plant (Walker County)	✓	Although previously permitted for 5.0 MGD, plant operates at 3.5 MGD with discharge of treated effluent into West Chickamauga Creek
Fort Oglethorpe Wastewater Treatment Plant (Catoosa County)		Abandoned; wastewater flow from surrounding areas are now connected to ISS/MBWWTP via North West Georgia Interceptor System

EXHIBIT B.2 Non-Industrial Wastewater Treatment Systems Status Update		
Non-Industrial Source Wastewater Treatment Systems	Still of Concern	Current Status of Service
Mitchell Acres Residential Subdivision (Catoosa County)	✓	On-site oxidation pond with treated effluent discharged into West Chickamauga Creek; plans to connect to ISS/MBWWTP
Dow-Reichold Chemical, Inc. (Walker County)	✓	On-site wastewater treatment with discharge of treated effluent into West Chickamauga Creek; plans to connect to Chickamauga WWTP
Walker County Correctional Institute (Walker County)		Sanitary sewers connected to Chickamauga WWTP
Westside Elementary School (500 Students) (Catoosa County)		Sanitary sewers tied to ISS/MBWWTP
Brookvale Estates Residential Subdivision (Catoosa County)		Sanitary sewers connected to ISS/MBWWTP
Lake Winnepesaukah Amusement Park (Catoosa County)		Sanitary sewers connected to ISS/MBWWTP
Source: Hensley-Schmidt, 1975, pp. 174-203		

Georgia Department of Natural Resources Environmental Protection Division and Other Data

Permitted Discharges in Study Area

Currently permitted discharges within the study area, according to the Environmental Protection Division of the Georgia Department of Natural Resources (Georgia EPD):

Catoosa County

- BOC Gases: 54 Biggs Road off Cloud Springs Road (SR 146) at US 41
- Morris Estates: oxidation pond
- Cochran's Truck Stop: I-75 at US 41 (Exit No. 345)
- Knight's Inn: I-75 at Cloud Springs Road (SR 146) (Exit 353)
- Ringgold Wastewater Treatment Plant
- Stone Man (quarry tailings on Lovingood Road, just off SR 151 north)

Dade County

- Wildwood Fuel: I-24 at SR 299 (Exit 169) (vehicle-fueling station and convenience store)
- Wildwood Lifestyle Center and Hospital (50-bed facility)

Reliable Health: (100-bed Sandmont Nursing Home on SR 301, South on Sand Mountain)
Trenton Wastewater Treatment Plant

Walker County

Vulcan Material: (quarry on Pigeon Mountain)
Stone Man: (quarry tailings below Rossville)
Dow-Reichhold: Kensington chemical industrial facility oxidation pond
Mountain View

Whitfield County

Vulcan Materials
Calloway Chemical
C&J Trucking

Additional Discharge Points of Concern

Catoosa County / Tiger Creek Subbasin

The Catoosa Rifle Range property currently operated by the Tennessee National Guard has facilities for large groups and currently with only on-site wastewater disposal systems.
Tiger Creek Elementary School has only an on-site wastewater disposal system to serve approximately 500 students.

Catoosa County / East Chickamauga Creek Subbasin

The residential, commercial, industrial, and institutional developments in and around Tunnel Hill in Whitfield County that have never been served by a sanitary sewer system
The commercial developments at I-75 Exit 341 that do not now have sanitary sewer service.
The commercial developments at I-75 Exit 345 that do not now have sanitary sewer service.
The numerous mobile homes in the Sugartown area operating with on-site disposal systems.

Catoosa County / Little Chickamauga Creek Subbasin

Increasing development without sanitary sewers near Yates Spring, the primary source for Catoosa Utility District, providing public water service to most of Catoosa County.
Construction now underway on a new elementary school south of Wood Station and 10 miles from the nearest sanitary sewer system.

Catoosa County / Peavine Creek Subbasin

Construction to commence on Heritage Middle School (with plans for a future high school) in an area not currently served by sanitary sewers.

Scenic Hills, Blevins Acres, Foster Hills, Wood Gate, and a number of other established residential developments that suffer from inadequate on-site wastewater disposal systems.

Walker County / West Chickamauga Creek Subbasin

While SI is connected to the Chickamauga sanitary sewer system, it discharges cooling water into West Chickamauga Creek.

The Mountain View residential subdivision long established with on-site wastewater disposal systems, many of which are failing.

Taqueta Falls is currently on septic tanks/field lines that discharge to ponds and spray irrigation, permitted by the Dade County Water and Sewer Authority, which provides public water to the residential development (although the development is in Walker County).

Proposed major commercial recreational and residential developments being proposed for McLemore Cove in areas currently 10 miles from the nearest sanitary sewer system.

Catoosa County / West Chickamauga Creek Subbasin

The Freddie Payne business center continues to pump and haul wastewater from an inadequate on-site disposal system.

The privately owned, operated, and maintained Direct Connection sanitary sewer system continuously suffers from inadequate operational management.

The privately owned, operated, and maintained Green Acres Mobile Home Park sanitary sewer system currently discharges into the East Ridge sanitary sewer system owned, operated and maintained by the Hamilton County Water & Wastewater Treatment Authority.

Ray's Trailer Park discharges wastewater into a sub-standard on-site disposal system.

Cinderella Hills, Dietz Road, Mineral Avenue, Red Bud Avenue, Westside Drive, Mack Smith Road, Walker Avenue, North Avenue, and Sutton Drive as well as many other area residential neighborhoods, suffer failing on-site wastewater disposal systems

Walker County / Spring Creek Subbasin

Lakeview and Midway area residential communities and commercial areas along US 27 long established but never served by sanitary sewers suffer with failing on-site wastewater disposal systems.

Orchard Hills, Warren Terrace, Fairview, and Park City residential and institutional areas, many with poorly performing on-site wastewater disposal systems.

Catoosa County / Spring Creek Subbasin

Waverly Park, Castleberry, Greenslake Circle, and Midway area residential neighborhoods suffer failing on-site wastewater disposal systems.

Several Newnan Springs and Lakeview area institutional and commercial developments have inadequate on-site wastewater disposal systems.

Dade County / Lookout Creek Subbasin

Pilot travel center has a leach line with approximately 7,500 linear feet of infiltrator system.

Residential, commercial, industrial, and institutional developments in and around Rising Fawn have never been served by a sanitary sewer system.

Alabama Welcome Center on I-59 discharges inadequately treated wastewater into streams that immediately flow into Dade County and Lookout Creek.

Dade County / Long Island Creek, AL, Subbasin

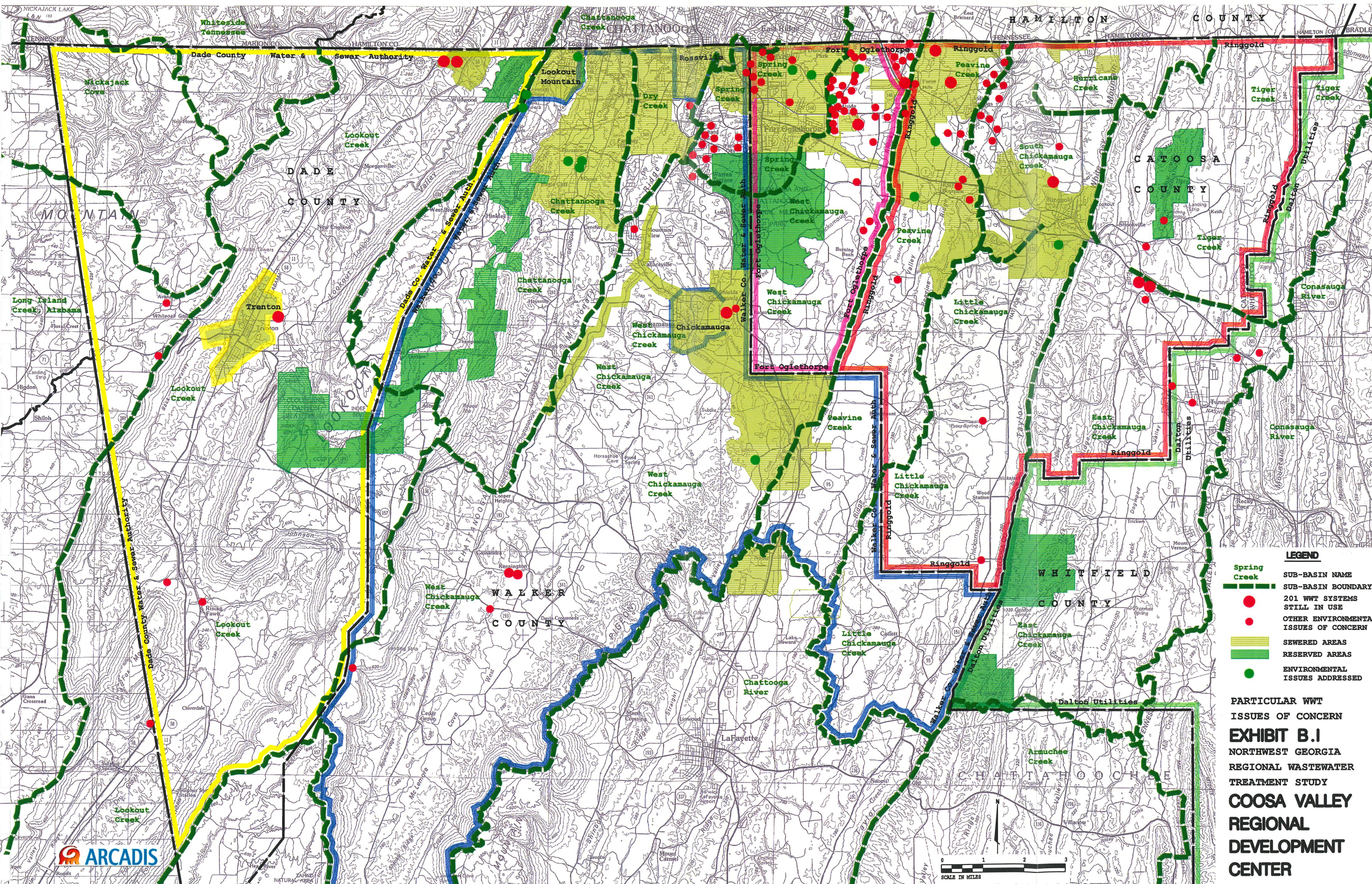
Sandmont Nursing Home has an on-site septic tank and field line system.

Davis Elementary School with approximately 500 students has a sand filter and field line system currently under expansion.

Environmental Issues

Among the significant complications presented throughout the study area for this report are the predominant soils, geological, and groundwater characteristics to be found there. In the flat-to-moderately-sloping valley areas that would otherwise be considered most developable, three characteristics are common:

- Prevalence of shallow, poorly percolating soils
- Seasonally high groundwater
- Shallow fractured limestone bedrock (karst geology)



LEGEND

- Spring Creek
- SUB-BASIN BOUNDARY
- 201 WWT SYSTEMS STILL IN USE
- OTHER ENVIRONMENTAL ISSUES OF CONCERN
- SEWERED AREAS
- RESERVED AREAS
- ENVIRONMENTAL ISSUES ADDRESSED

PARTICULAR WWT ISSUES OF CONCERN

EXHIBIT B.1

NORTHWEST GEORGIA REGIONAL WASTEWATER TREATMENT STUDY

COOSA VALLEY REGIONAL DEVELOPMENT CENTER

