

**Wake County
Existing Development
Load Inventory and Characterization of Load Reduction Potential
Falls Lake**



Submitted January 31, 2013

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Characterization of Land Use in Wake County's Jurisdiction of Falls Lake

An understanding of Wake County's long standing land use policies, which designate the County's jurisdiction in Falls Lake as a Non-urban Area Water Supply Watershed is essential to understanding why our very detailed analysis of existing development resulted in a negative nutrient load for stormwater. Below are excerpts from Wake County's Comprehensive Land Use Plan regarding water supply watershed protection policies and zoning.

Chapter V. Water Supply Watershed Protection Policies (Source: Wake County Land Use Plan)

A. Water Quality Goal - To maintain and enhance the quality of public water resources, allowing no further degradation of water quality, while allowing limited development in water supply watersheds.

B. Background - Wake County first adopted regulations to protect its water supply watersheds in 1984. Five years later, the North Carolina General Assembly adopted the Water Supply Watershed Protection Act, which required all local governments to adopt and apply water supply watershed protection regulations. In 1992, the State Environmental Management Commission (EMC) adopted minimum statewide water supply watershed management requirements that local watershed protection regulations must meet.

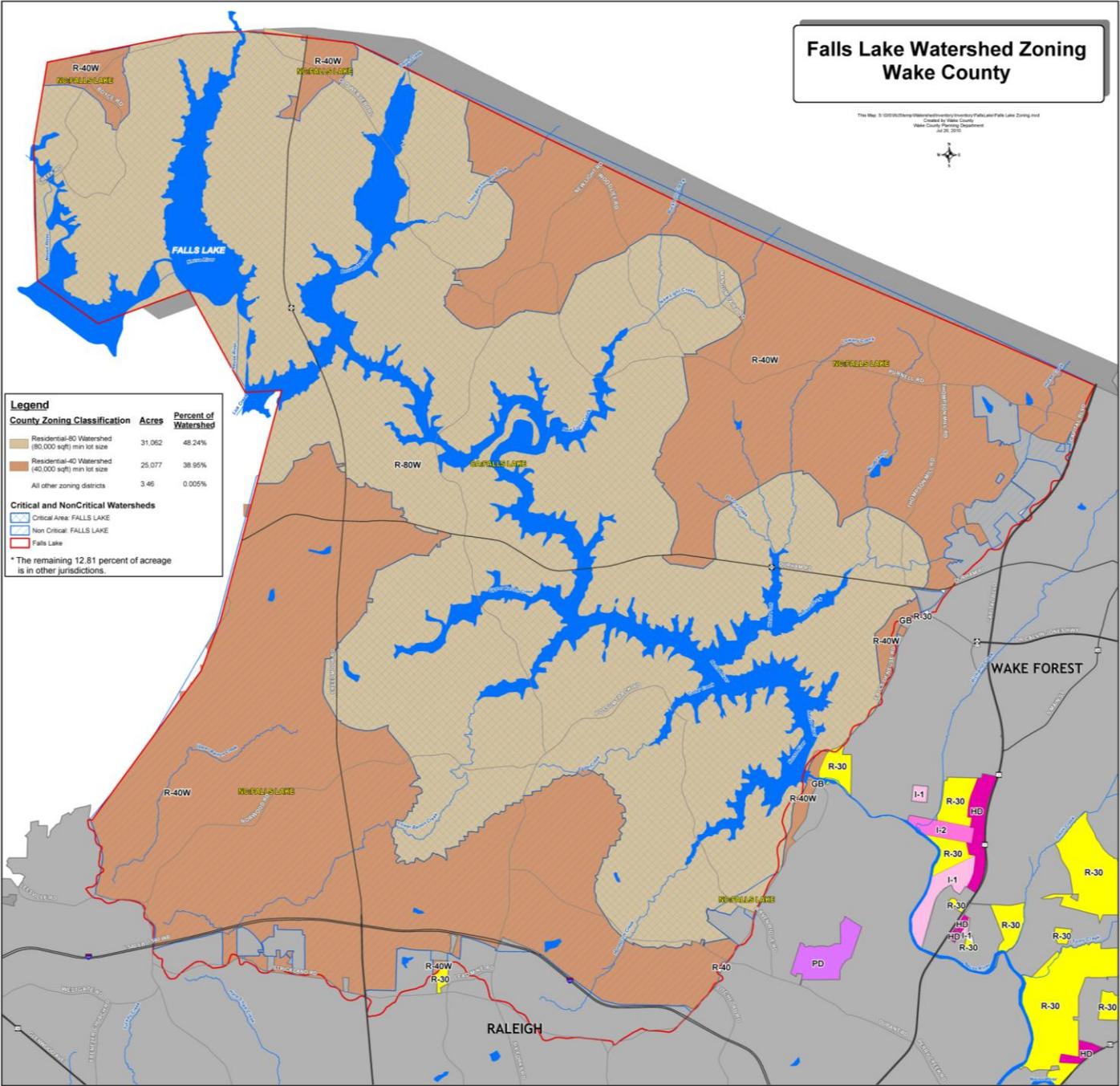
C. State Water Supply Watershed Classifications - State water supply protection rules describe five protective classifications for surface water supplies.

The most restrictive classification, WS-I, is applied to a few dozen small, pristine watersheds located in the western mountains of North Carolina. There are none in Wake County. The least restrictive classification, WS-V, has no categorical restrictions or minimum standards for development, and refers to the portions of water supply watersheds which lie outside of WS-IV protected area boundaries. No stream segments are classified WS-V in Wake County.

The State uses these classifications to determine the type of point source discharges it will permit in each water supply watershed. The classifications are also used to determine what set of water supply watershed standards local governments must implement to control non-point source pollution (mainly stormwater runoff). Each water supply watershed, however classified, has a "critical area," which is that part of the watershed closest to the water supply source where it is most important to minimize the discharge, and maximize the filtration, of potential pollutants.

All of the approximately 63,200 acres of the Falls Lake Watershed in Wake County's jurisdiction is a protected non-urban area water supply watershed. See Map 1 Falls Lake Watershed Zoning. The quality of a drinking water resource is highly dependent on the nature of land use within its watershed. However, given there are fourteen (14) local governments with planning and zoning jurisdiction in the Falls Lake watershed, land use regulations, development densities, watershed protection and resultant nutrient loads will vary considerably.

Map 1 Falls Lake Watershed Zoning

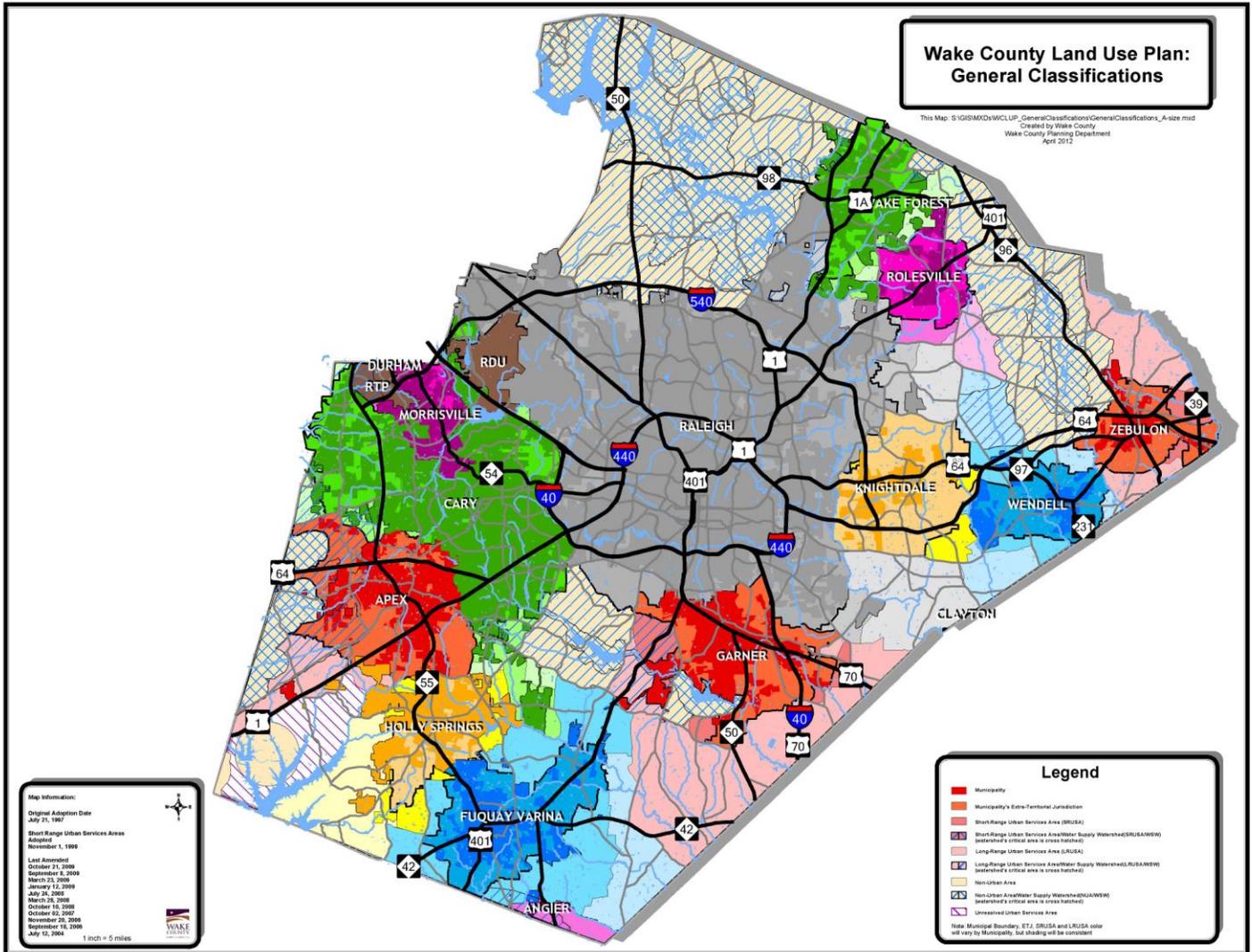


The table below shows the State classification of Falls Lake water supply watershed. All acreage figures are approximate:

Water Supply Watershed	State Classification	Total Size (Acres)	Acres in Wake County	Acres (% of Total) in County Jurisdiction
Falls Lake	WS-IV	174,000	63,200	55,000 (32%)

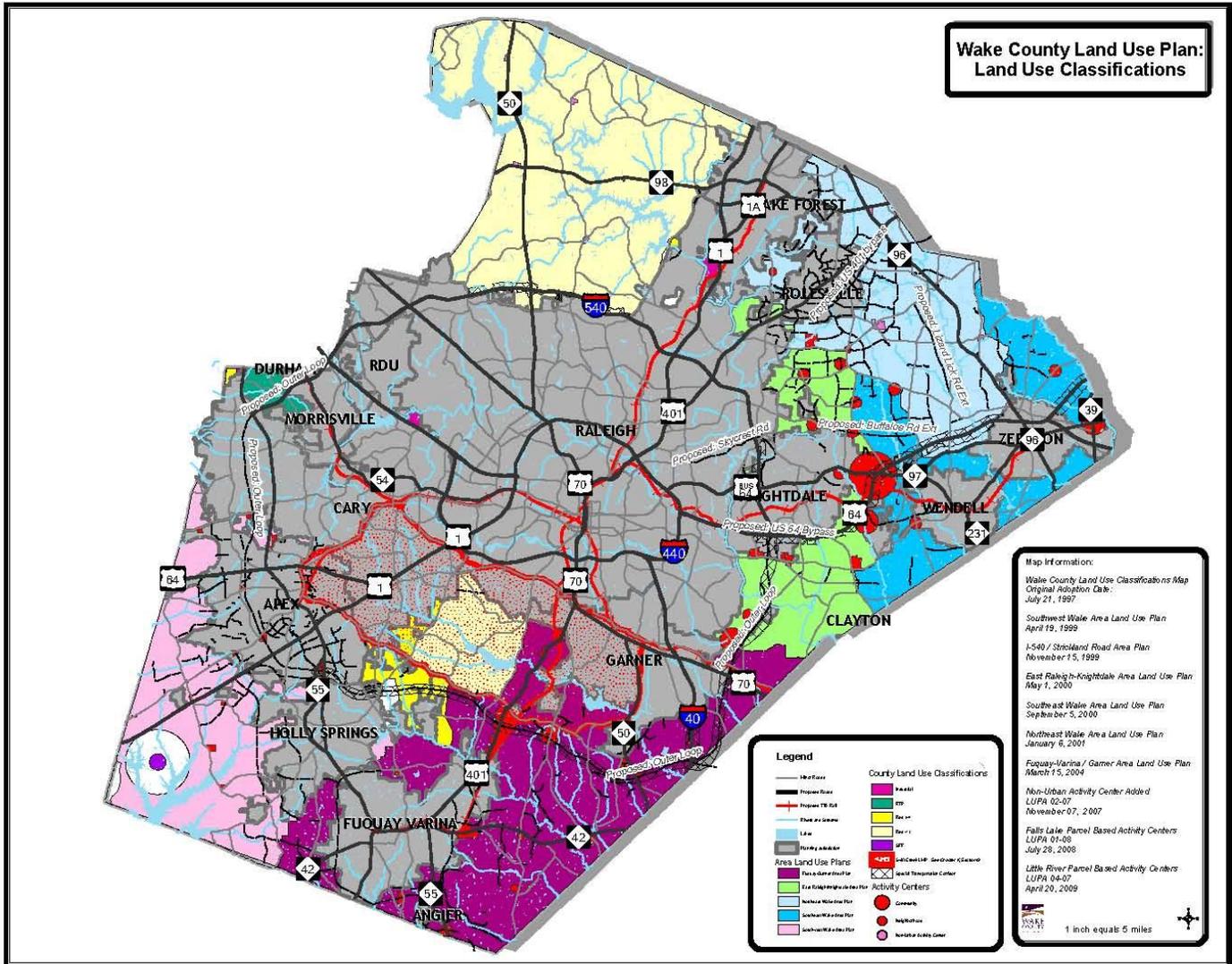
D. Land Use Classifications of Water Supply Watersheds - As shown on Map 2 - General Classifications Map, nearly all of the Falls Lake watershed within the County's jurisdiction is classified as Non-Urban Area/Water Supply Watershed, and thus are not intended to become urbanized. Only that part of the Falls Lake watershed south of the Northern Wake Expressway (I-540) is classified as part of Raleigh's Urban Services Area. Areas shown in gray along the eastern boundary of the watershed are either in the Town of Wake Forest's or the City of Raleigh's planning jurisdiction.

Map 2



Except for a small number of Non-Urban Neighborhood Activity Centers, Map 3 - Land Use Classifications shows the Non-Urban Area of Falls Lake, as Residential, with a maximum density of one dwelling unit per 2 acres in critical areas and a density maximum of 1 dwelling units per acre in the balance of the watershed.

Map 3



Wake County defines the critical area of a water supply watershed within its jurisdiction as extending 1/2 mile plus 300 feet from the flood pool elevation of the water supply source. However, based on a study specific to the Lower Barton's and Honeycutt Creek basins in Falls Lake water supply watershed, the critical area boundary in those two basins is set near the 200-minute time-of-travel line, meaning that all land in those basins where stream water takes 200 minutes or less to reach the Lake is within the critical area.

E. State Controls In Water Supply Watersheds - The State is primarily responsible for regulating point source discharges within water supply watersheds. In WS-II watersheds, the State may allow domestic discharges but no new discharges of municipal or industrial wastes. In WS-III watersheds, the State may allow domestic and non-process industrial discharges, but as in WS-II watersheds, no new municipal or industrial discharges. In WS-IV watersheds, the State may allow all types of discharges, but in their critical area, require additional treatment programs for any new industrial discharges. However, before the State issues a discharge permit in Wake's jurisdiction, it must be determined that the proposed use meets all requirements of County ordinances.

F. Local Land Use Controls In Water Supply Watersheds

1. Introduction - The State Water Supply Watershed Protection Act makes local governments primarily responsible for controlling non-point source discharges within water supply watersheds, by requiring local governments to adopt land use regulations meeting the State's minimum water supply watershed requirements.

The State's water supply watershed protection requirements provide both a "low-density option" and a "high-density option." Requirements under the low-density option emphasize limits on housing density and impervious surface coverage, as well as the use of vegetated buffers along watercourses. Requirements under the high-density option do not limit housing density, and allow greater impervious surface coverage, but call for the installation of wet detention basins, or other engineered stormwater management systems, that both control the rate of stormwater discharge and allow the removal of suspended solids. If a local government elects to use the high-density option, it must assume ultimate responsibility for the operation, maintenance, and inspection of the engineered stormwater controls.

Wake County does not own or operate major water or wastewater treatment systems, and the intensity of development allowed under the "low density option" is appropriate for development without such central systems. Further, the County does not have a stormwater utility operation, and is not otherwise organized for operating and maintaining engineered stormwater controls throughout its zoning jurisdiction. The County, therefore, has elected to meet the State's requirements under its low-density option. The County's water supply watershed protection regulations are intended to meet all of the State's minimum requirements, and to exceed those requirements as needed, based on past Wake County practices and policies, which predated the State's Water Supply Watershed Protection Act.

Wake County protects water quality in water supply watersheds by applying land use and development regulations that are designed to keep impervious surface coverage low and to provide adequate infiltration of runoff water into the ground. They do so by limiting the density of residential development, limiting the impervious surface coverage of nonresidential development, requiring vegetated buffers along watercourses and buffer building setbacks, limiting nonresidential land uses to those with characteristics less likely to adversely affect water quality, controlling the storage and use of hazardous materials, and applying design standards to minimize adverse water quality impacts. These land use and development regulations help to maintain water quality and direct more dense growth out of water supply watersheds and into the urbanizing areas. The remainder of this section gives an overview of Wake County's water supply watershed protection regulations.

2. Impervious Surface Coverage and Housing Density Limits - When development such as roads and houses occurs in the watershed, impervious (built-upon) surfaces are increased and there is less infiltration of rainwater into the ground. This results in a larger volume of runoff, moving at a faster velocity, and carrying more pollutants, than would normally be the case without the development. Rain falling in the area that does not infiltrate into the soil, or return to the atmosphere by evapotranspiration, flows as runoff into the surface water. As development continues to occur and more land is built upon, the quantity, rate, and contamination of runoff going into waterbodies increase. Eventually, a point can be reached where the water supply source is degraded, recreational and ecological features are impaired, and costly treatment is needed to provide clean drinking water.

Impervious surfaces can be limited directly by applying maximum impervious surface coverage standards to new development. Alternatively, impervious surfaces can be limited indirectly by applying maximum density standards or floor area ratios to new development. Because housing within the County's jurisdiction tend to be single-family detached homes, which have a relatively consistent impervious surface coverage, Wake County has elected to control impervious surfaces within new residential development by applying maximum lot density and minimum lot size standards. Within nonresidential developments, where impervious surface coverage is not

relatively consistent, the County controls impervious surfaces directly by applying maximum impervious surface coverage standards.

In general, Wake County limits new residential development to a maximum gross density of 1 unit/2 acres (minimum lot size of 80,000 square feet) in the critical areas of a water supply watershed, and a maximum gross density of 1.0 lot/acre (minimum lot size of 40,000 square feet) in the balance of the watershed. It limits new nonresidential development to a maximum impervious surface coverage of 6% (of the development site) in the critical area of a water supply watershed and a maximum impervious surface coverage of 24% in the balance of the watershed. Where nonresidential development is proposed on land that is residentially-zoned, as is the case in most of the watershed, it must also provide stormwater controls on the initial runoff from impervious surface coverage exceeding 12%.

3. Watershed and Drainageway Buffers - Watershed and drainageway buffer requirements are intended to maintain strips of natural vegetation that serve to remove pollutants from stormwater runoff before they can reach a water supply source, or a watercourse or other drainageway that drains to the water supply source. They do so by allowing infiltration of runoff and filtration of pollutants through the ground and soil, slowing down the runoff flow to allow settling and deposition of pollutants, and providing vegetation that absorbs pollutants through the roots. The provision of vegetated, undisturbed buffers within water supply watersheds, therefore, serves as an important and effective method of maintaining the quality of public water supply sources and protecting those sources from the potential polluting activities associated with development within the watershed.

Wake County requires new development in all water supply watersheds to maintain watershed buffers along perennial streams (as shown on U.S.G.S. topographic maps) as well as along any other streams that drain at least 25 acres. It also requires new development to maintain drainageway buffers, and around water impoundments, that drain at least five (5) acres, but less than twenty-five (25) acres. Except as minimally necessary to accommodate certain public projects, these watershed and drainageway buffers are required to remain undisturbed.

4. Nonresidential Land Use Limits - Most of the land within water supply watersheds in the County's jurisdiction is currently zoned Residential-80 Watershed (critical areas) or Residential-40 Watershed (balance of watershed). This zoning generally limits nonresidential uses to only those low-impact types and intensities not likely to adversely impact water quality, and also treats such uses as special uses requiring extra scrutiny of (among other things) potential water quality impacts (especially in the critical areas of water supply watersheds). All land classified Non-Urban Area/Water Supply Watershed by the General Classifications Map that is currently so zoned is intended to remain subject to the same or similar zoning that strictly limits the types and intensity of nonresidential development to those posing little potential threat to water quality and subjects development of such uses to special scrutiny. Land classified Non-Urban Area/Water Supply Watershed that is currently zoned otherwise is intended to remain subject to overlay zoning that applies the supplemental impervious surface coverage limits, buffer requirements, and hazardous material controls necessary to meet the State minimum watershed protection requirements for the low-density option.

Within those parts of water supply watersheds classified as Urban Services Area/Water Supply Watershed, nonresidential uses may be developed, provided they are consistent with the Land Use Classifications Map. They may be developed either under current residential zoning (as special uses) or under nonresidential zoning subject to overlay zoning that applies the supplemental impervious surface coverage limits, buffer requirements, and hazardous material controls necessary to meet the State minimum watershed protection requirements for the low density option.

5. Hazardous Material Controls - If hazardous materials should get into a watercourse leading to a water supply source, they could significantly threaten the quality of the community's drinking water. Although residential use and development generally does not use or store hazardous materials in quantities significant to warrant special controls beyond the generally applicable stormwater runoff and buffer standards, a number of nonresidential uses and development that may be allowed in water supply watersheds might involve the use and storage of significant quantities of hazardous materials. State and federal regulations already exercise a good deal of control over the use, storage, and transfer of hazardous materials.

To further protect water supply sources from hazardous materials, Wake County generally limits the types and intensity of nonresidential uses in water supply watersheds, especially in their critical areas (see above). Within the critical areas of watersheds, the County prohibits nonresidential development from using or storing hazardous materials. Within the balance of the watershed, the County requires nonresidential development in water supply watersheds that uses or stores hazardous materials to prepare an inventory of such materials and emergency procedures to contain any spills, and to design use and storage facilities to maximize spill prevention. This requirement is intended to ensure that occupants of nonresidential development, as well as area governments, are aware of the location, types, and general amount of hazardous materials being used or stored in watersheds, and can respond accordingly in case of a spill.

6. Water Quality Protection Design Standards - In addition to limiting the types and intensity of development allowed within water supply watersheds, Wake County also helps ensure protection of water supply sources by applying certain design standards to all development within a water supply watershed. Those standards require all new development, to the maximum extent practicable, to minimize impervious surface coverage, direct stormwater runoff away from surface waters, incorporate Best Management Practices (BMPs) to minimize water quality impacts, and transport stormwater runoff by vegetated conveyances. In addition, the County requires residential cluster development in water supply watersheds, to the maximum extent practicable, to concentrate development sites in upland areas (away from surface waters and drainageways), to retain the remainder of the development site in a vegetated or natural State, to minimize concentrated stormwater flow, and to maximize the use, and length, of sheet flow through vegetated areas.

Methodology Used for Estimate of Nutrient Load from Existing Development from Stormwater

All development with preliminary approval within the existing load period (01/01/2007 – 07/02/2012) and not subject to the New Development Rule was used in calculating Wake County's existing load. For development approved prior to January 1, 2007, those developments are considered "vested" during the baseline period. In order to meet the intent of the Falls Rules, for baseline period developments that did not start construction or started construction during the existing load timeframe, that development was also included in Wake County's existing load. Seventeen subdivisions and nine commercial sites were included in existing development loads. Wake County's calculated load is considered to be an underestimate because it does not include Wake County's land use planning practices (ex. low density development and disconnected impervious) and nutrient transport loss. Accounting methods for these practices need to be developed.

Post development loads were calculated using the Wake County Hybrid Tool. Wake County developed its own hybrid stormwater tool incorporating *Wake County Unified Development Ordinance* requirements and nutrient requirements associated with the *Falls Lake Nutrient Strategy*, *Jordan Lake Nutrient Strategy* and *The Neuse Rules*. This tool was

submitted to and approved by Environmental Management Commission as part of the County's New Development Program. The tool incorporates requirements as outlined in the *Jordan/Falls Lake Stormwater Load Accounting Tool – User's Manual* and is as protective as the Jordan/Falls tool. All nutrient load calculations for this tool use the same methods used in the Jordan/Falls tool. All inputs used for existing development load calculations were obtained from stormwater file calculations provided by the development engineer, GIS, record plats, and other Wake County records. Stormwater file calculations represent the most readily available and accurate information available for existing load estimations. Built-out conditions were assumed for all development.

Reductions from Post Development Load (See below graphic for a visual of load calculation)

Uniform predevelopment loads were removed from the Wake County total loads as provided in 15A NCAC 02B.0278(3)(a). Offset loads with previous payments to EEP were also removed from Wake County's existing load.

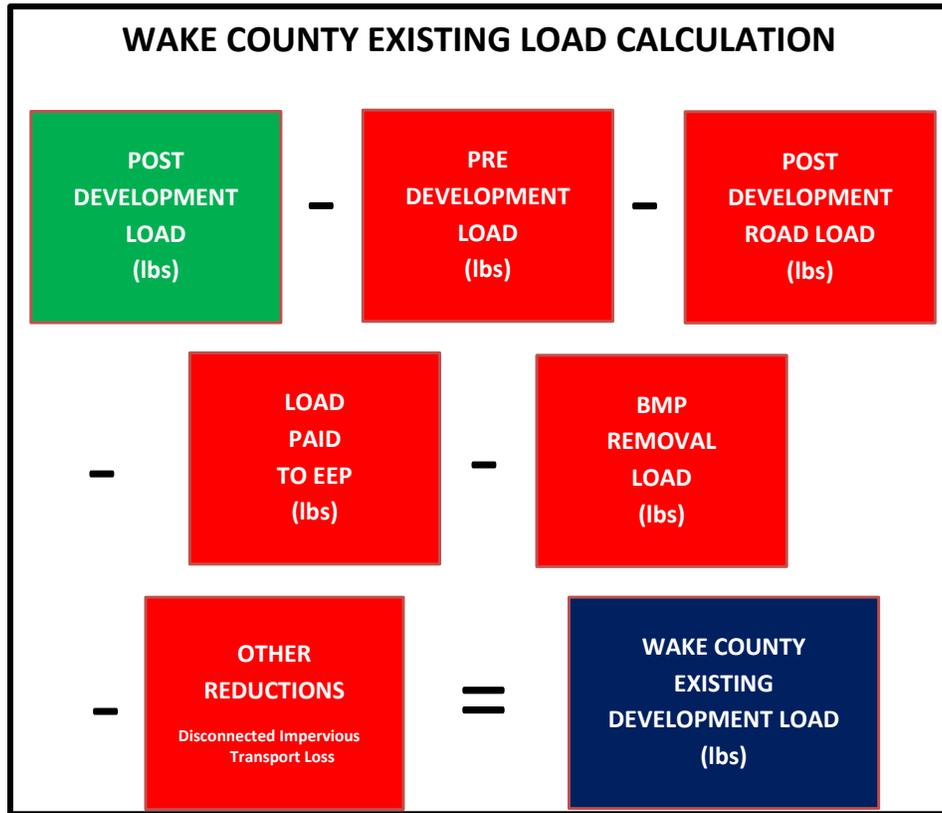
NCDOT Responsible for County Roads - Since 1931, Maintenance of County public roads is vested in the North Carolina State Department of Transportation. See Appendix A, N. C. General Statute 136-51. See Appendix B, N.C General Statute 136-66.1 Responsibility for Streets Inside Municipalities regarding municipals streets 15NCAC 02B.0278(4)(f)). All proposed public roads associated with County subdivisions are reviewed by NCDOT to ensure improvements are done in accordance with the specifications and requirements of the Department of Transportation for future acceptance for maintenance. Prior to acceptance for maintenance, such roads remain the responsibility of the developer and acceptance by NCDOT of roads for maintenance completes the subdivision process. Given public roads in Wake County are the responsibility of a State entity, the Department of Transportation, the acreage and load associated with such public roads from existing development has been removed from Wake County's calculated load.

Under its Unified Development Ordinance, Wake County requires the entire acreage of a proposed subdivision (including proposed roadways) to be used in calculations required for stormwater management. In order to calculate an accurate load per development, post development load had to be modified for existing load calculations. For the treated public roads associated with subdivisions, calculations included a breakdown of nitrogen and phosphorus load from public roads. Post construction load was calculated using the WC Hybrid Tool. The WC Hybrid Tool was run for a second time, not including the public road acreage as impervious but as the preexisting land use (as if it had not developed). The difference between the two loads represents the amount of nitrogen and phosphorus loads from public roads. These loads generated from public roads were then removed from Wake County's existing load. (15A NCAC 02B.0278(4)(f))

Other areas identified for as sources of future reductions include:

- Disconnected Impervious
- Transport Loss (From site to stream & stream to lake)
- Removal of nutrient by conventional septic systems

Wake County welcomes the opportunity to work with NCDENR and the NSAB and other entities to develop a system of credits for these and other nutrient reduction practices.



Nutrient Load Results from Existing Development from Stormwater

The below table summarizes the results of Wake County’s existing load calculation for stormwater. After comprehensive analysis, it was determined that after all reductions were taken from generated development loads that Wake County does not have a load to offset. Additionally, Wake County did not assign a quantitative value to reductions such as disconnected impervious and transport loss which would further decrease the load. All calculations used in developing this summary are provided digitally with the existing development load inventory submittal.

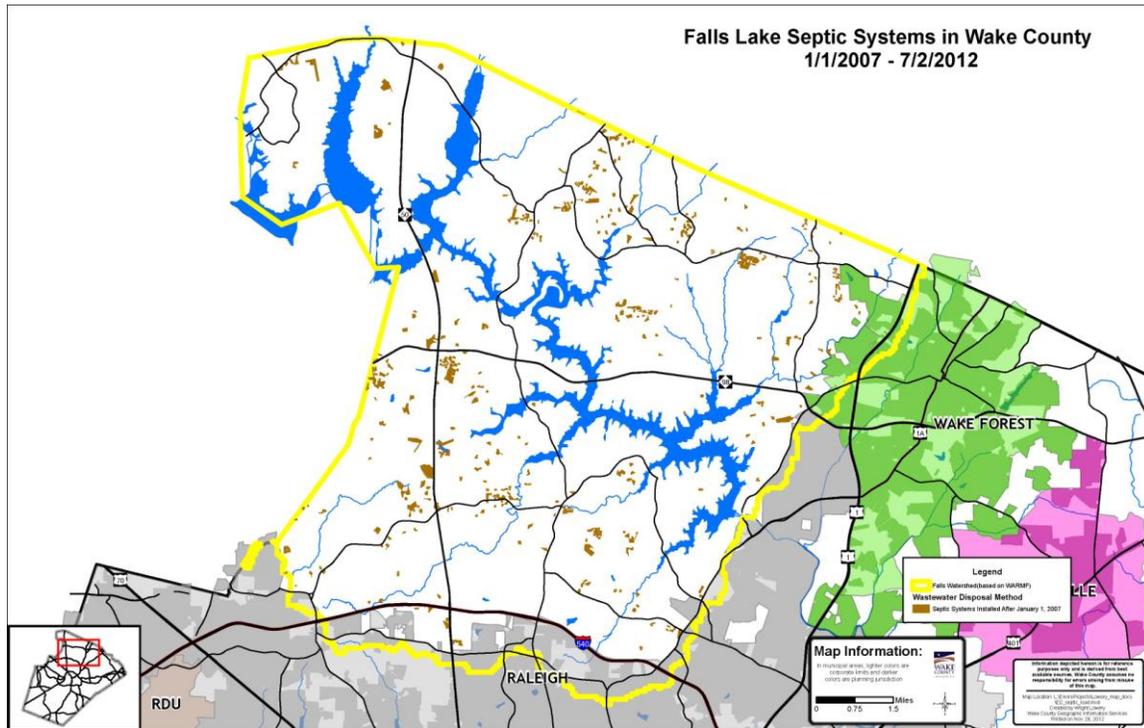
STORMWATER EXISTING LOAD SUMMARY - FALLS LAKE

Development Type	Total Site Acreage (Ac)	POST DEVELOPMENT		REDUCTIONS					TOTAL EXISTING LOAD	
		Posr BMP N Load (lb/yr)	Posr BMP P Load (lb/yr)	Uniform Pre Development N Load (lb/yr)	Uniform Pre Development P Load (lb/yr)	N Load from Public Roads (lb/yr)	P Load from Public Roads (lb/yr)	N Load Paid to EEP (lb/yr)	Post Development N Load (lb/yr)	Post Development P Load (lb/yr)
Residential Subdivisions	1,315.77	4,041.47	833.43	3,802.56	828.93	507.19	197.45	45.21	-313.49	-192.95
Commercial	338.24	684.04	154.66	977.51	213.09	0.00	0.00	56.73	-350.20	-58.43
Total	1,654.01	4,725.52	988.10	4,780.08	1,042.02	507.19	197.45	101.94	-663.69	-251.38

Inventory of Existing Development Septic Systems and Load Discussion

Wake County added 597 on-site single family subsurface septic systems between 01/10/07 and 07/02/12. See Map 4 – Falls Lake Septic Systems below and Appendix C for a list of the properties shown.

Map 4



Wake County did not calculate the nutrient load from existing development for septic systems as there is currently no accounting methodology, nor consensus on such or even informal guidelines to undertake this estimate. It is our understanding that the Nutrient Scientific Advisory Board has tasked its consultant, Tetra Tech, with developing a methodology for calculating loads from various types of on-site wastewater disposal systems, both properly functioning and malfunctioning. Wake County is willing to provide information as requested to assist Tetra Tech in this process.

There is ample scientific evidence that Phosphorus (P) has very little potential to move any distance in clay-textured soils within the Wake County portion of the Falls Lake Watershed. Cecil soils, as described by the Wake County Soil Survey, have been extensively studied for phosphorus movement with regard to plant available fertilizer as it relates to its water solubility. These studies show that the phosphorus has limited movement in the clay-textured soil horizons and very little to zero influence on groundwater. The chemical structure of the clay lattice allows for adherence of the phosphorus molecule in a way that obstructs movement. Many of the drainfield trenches that accept septic tank effluent for final disposal are installed in clay-textured soils in the Wake County Falls Lake Watershed.

A GIS exercise was done to determine the soil type at the centroid of the 597 on-site single family subsurface septic systems properties. Of the 597 on-site single family subsurface septic systems 94% showed a clay-textured soil type at the centroid of the property. Cecil soil was noted at the centroid of 60% of these properties. This exercise shows that the vast majority of septic systems in Wake County (94%) are installed in soil bodies that will not transfer phosphorus to the groundwater. Additionally, properly functioning septic systems in clay-textured soils in the Wake County portion of the Falls Lake Watershed should have a phosphorus loading at or near zero. Wake County is interested in expanding this discussion with Tetra Tech. In developing credit for onsite wastewater disposal it is essential that distinctions be made for different types of systems (sand filters versus subsurface/conventional septic) and soils as these result in varying nutrient loads.

Characterization of Load Reduction Potential [15A NCAC 02B.0278 (4)(d)(i)-(vii)]

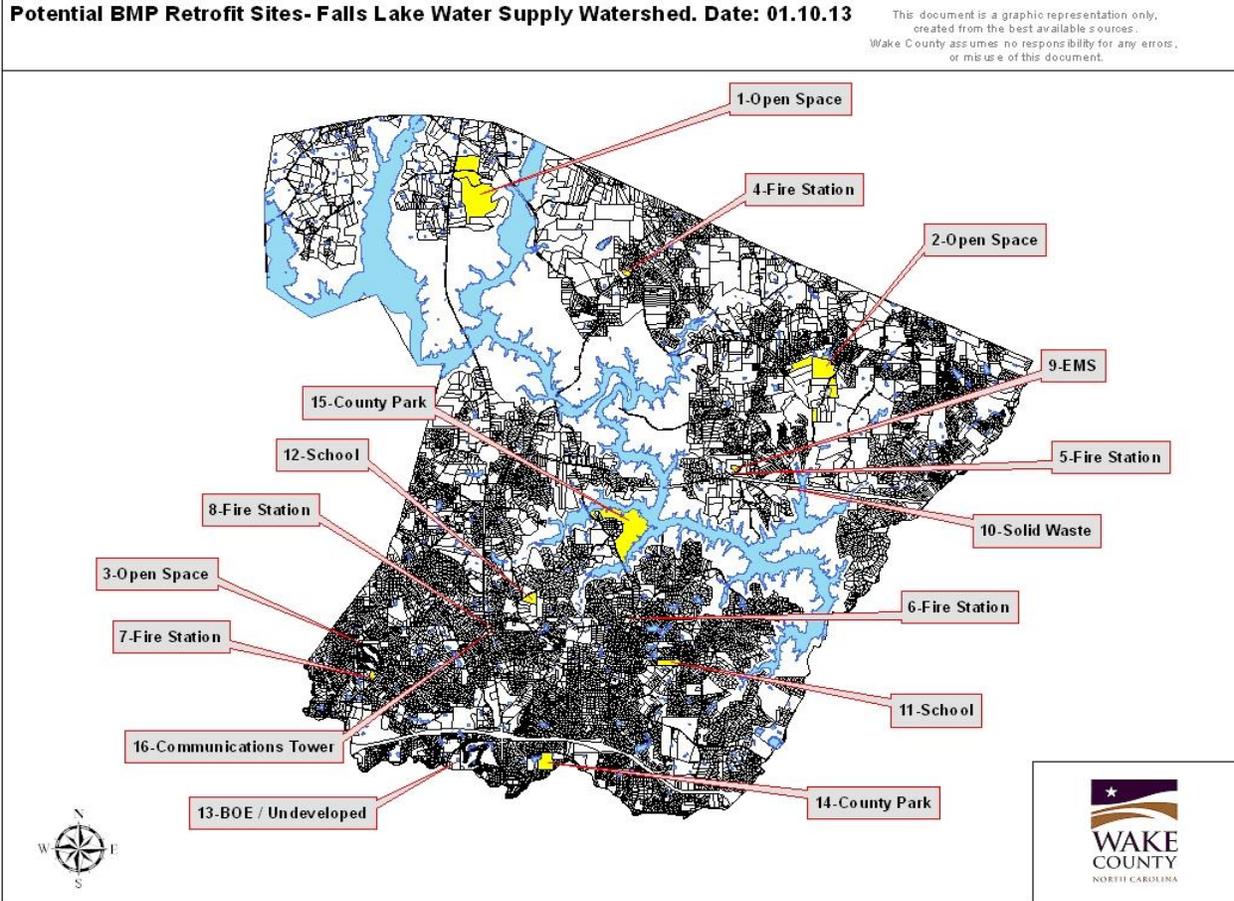
- i. Wastewater Collection Systems – Not applicable. Wake County does not own or operate a public wastewater collection system.
- ii. Discharging sand filters - there are only two parcels served by discharging sand filters. County land use policy prohibits the extension of public utilities in its Water Supply Watershed unless it is to address a public health and safety issue created by failure of waste disposal systems serving existing system. There have been no reports of failure of either of these systems. It is financially infeasible to construct a public system to serve these two parcels.
- iii. Properly functioning and malfunctioning septic systems – As part of its proposed ED program, Wake County reviewed information available. The study 'Wake County Field Performance and Operation Maintenance Survey of Systems Installed 1982-2002' was compiled in June 2003. Embodied in this study is a subset of data from Falls Lake. The data show 7 malfunctions out of 111 systems surveyed bringing the malfunction rate to 6.3% for the period of time 1982 to 2002 within Falls Lake. More recently; Wake County is required, by rule, to review septic systems permitted with a pump every 5 years. The County has made a special effort to review the pump systems in Falls Lake. Of the 597 ED systems there are 151 that are pump systems that have been recently review by staff. The pump systems reviewed make up 25% of the ED systems in the watershed which is a substantial percentage. These systems are required to be review at the 5 year frequency because they require more maintenance than a standard gravity system which provides greater malfunction risk and subsequent health risk.

Of the 151 pump systems inspected, there were 8 pump systems with malfunctions (5.3% malfunction rate).

This 5.3% malfunction rate should be considered a conservative malfunction rate for Falls Lake. The number is derived from a substantial portion of all systems, and one of the highest risk subset of all systems. This data correlates similarly to the previous study. Furthermore, these systems are considered 'young', being that they are less than 7 years in operation. The 'Wake County Field Performance and Operation Maintenance Survey of Systems Installed 1982-2002' shows system age as a statically significant factor for septic system malfunction rate at about a 1 %. Since these systems are "young", age does not apply. Considering the historical malfunction rate in Falls Lake is 6.3% with 1% attributable to age, leaving 5.3% attributable to maintenance. Therefore, the malfunction rate of the latest survey of the young ED maintenance intensive pump systems resulting in a rate of 5.3% provides correlation to idea that maintenance is critical to the long term prospects of properly functioning septic systems.

- iv. Restoration opportunities in utility corridors – Not applicable. Wake County does not own or operate any utilities not does it have access rights to lands owned by such utilities.
- v. Fertilizer Management Plan for local government owned lands – County owned properties within Falls Lake are managed by the General Services Administration Department or if a County Park , by the Parks and Recreation Department, neither of which currently have a written fertilizer management plan or certified applicators. Such a plan could be developed to ensure safe storage, proper use and minimization of fertilizer and the implementation of best management practices to protect surface and groundwater resources. See Map 5 – BMP Retrofit Sites for County and School District owned properties. Note Wake County School district is a separate legal entity from Wake County local government.

Map 5



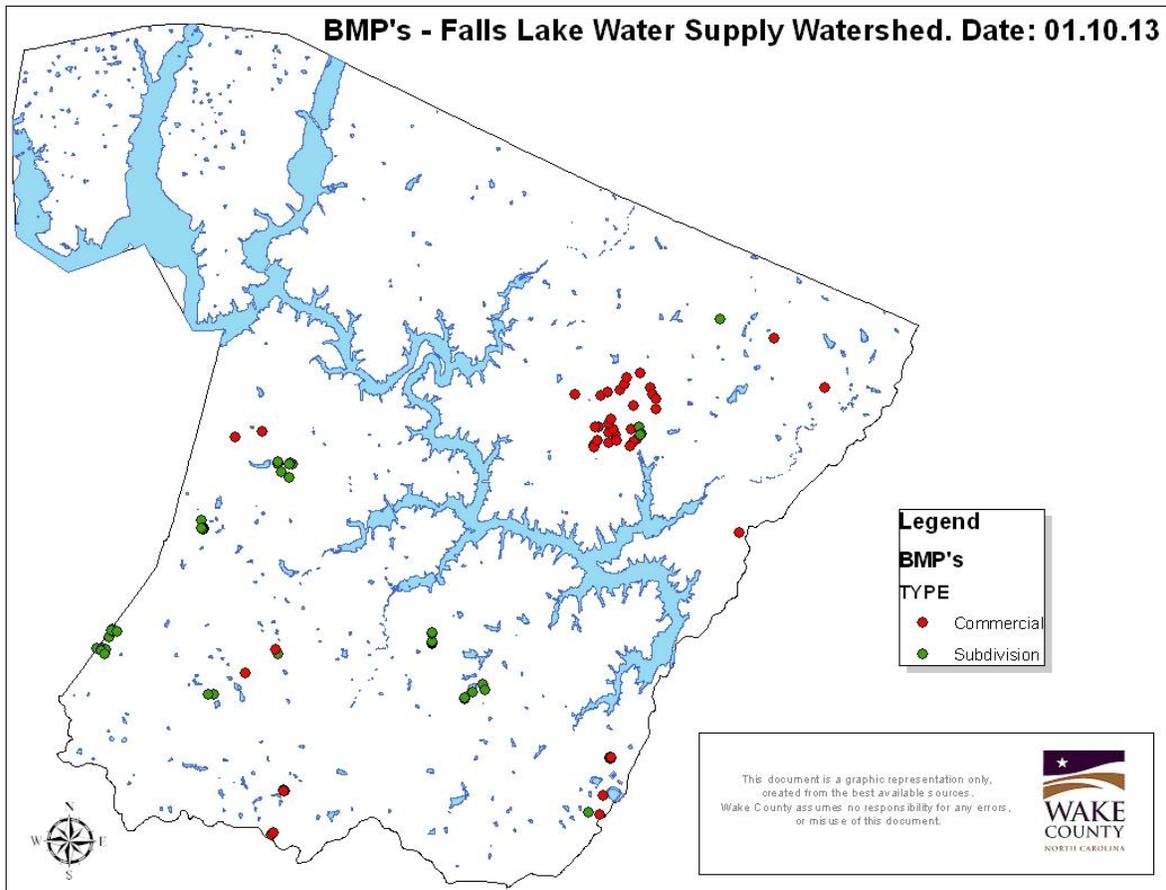
- (i) Structural stormwater practices, including intended purpose, condition, and potential for greater nutrient control – Wake County began requiring stormwater management devices in the Falls Lake Watershed in 1984, when the County designated Falls Lake as a non-urban Water Supply Watershed. R-80W zoning applies only to land within the watershed critical area. Its standards are intended to ensure that residential developments (and very limited non-residential development) minimize pollution of the water supply source from stormwater runoff. The maximum density is one dwelling unit per 2 acres. All non-residential land must limit the amount of impervious surfaces to 6% of the site area. R40W zoning applies to land beyond the critical area (general 2 miles plus 300 feet from the water supply source’s flood pool elevation). All non-residential development must limit the amount of land cover by impervious surfaces to no more than 24% of the site area and if over 12% have been required since 1984 to manage the first ½ inch of runoff. Restrictive residential zoning (and limited non-residential development) and subdivision standards ensure development remains low density to protect water quality. Wake County implements its own volume control stormwater ordinance (since 2006), which establishes target curve numbers for stormwater runoff for residential development. These rules apply in addition to the Neuse Rules.

Developers may meet the target curve number by employing a variety of non-structural low impact development best management practices such as disconnecting impervious surface, preservation of wooded areas, and reforestation. If the proposed development cannot meet the target curve number with site practices alone, then structural best management practices are employed to meet the volume control requirements. Examples of structural best management practices included wet and dry detention basins,

constructed wetlands, underground detention devices, infiltration devices, bioretention, etc. The current ordinance allows both regional and individual lot BMPs, which must be maintained by the property owner or an owners' association.

As Wake County had stormwater regulations in place prior to adoption of the new development rule on July 2, 2012, there are currently 170 BMPs in the Wake County's jurisdiction in Falls Lake that predate the new development rule. All BMPs are privately owned and maintained and Wake County does not possess the right to affect a retrofit on private property. See Map 6 – BMPs - Falls Lake Water Supply Watershed below and Appendix D for a list of Wake County BMPs.

Map 6



- (ii) Wetlands and riparian buffers - including potential for restoration opportunities - Wake County has required undisturbed vegetative buffers and building setbacks from riparian buffers since 1984 in its Water Supply Watersheds. Below is a table of applicable Neuse Rule buffer standards and the current County standards, which exceed those of the Neuse Rules as follows:

Wake County Buffer Standards

Local Program	Reference	Water body		Buffer	
NC Division of Water Quality Riparian Buffer Rules	NC Buffer Rules	Neuse River Basin	Intermittent and perennial streams, and perennial water bodies (ponds, lakes) and estuaries	Total = 50 ft Zone 1 (30 ft) + Zone 2 (20 ft)	Zone 1 Undisturbed
Wake County	Neuse River Basin Nutrient Sensitive Waters Management Strategy Unified Development Ordinance: Sec 11-21	Neuse River Basin	Intermittent and perennial streams	50 ft	Disturbed
			All water supply impoundments with a drainage area of 25 acres or more that are located inside the water supply watershed draining into the water supply water impoundment (Water supply watersheds)	100 ft (20 ft building setback from buffer)	Undisturbed
			All water impoundments with a drainage area of at least 5 acres, but less than 25 acres, located inside the watershed draining into the water supply impoundment (Water supply watersheds)	30 ft (20 ft building setback from buffer)	Undisturbed
			All non-water supply impoundments with a drainage area of 25 acres or more that are located inside the watershed draining into the non-water supply impoundment (Water supply watersheds)	50 ft (20 ft building setback from buffer)	Undisturbed
			Perennial streams (Water supply watersheds)	100 ft	Disturbed
			Non-perennial watercourses, channels, ditches or similar physiographic features with a drainage area of 25 acres or more that are located inside the watershed draining into the stream (Water supply watersheds)	50 ft (20 ft building setback from buffer)	Undisturbed
			Watercourse, channel, ditch, or similar physiographic feature with a drainage area of at least 5 acres, but less than 25 acres, located inside the drainage area of the drainageway (Water supply watersheds)	30 ft (20 ft building setback from buffer)	Undisturbed

Because undisturbed riparian buffers and building setbacks have been required since 1984 and were made even more restrictive in 2003, these areas are well protected in Wake County's jurisdiction and offer very limited restoration opportunity. It is likely that the best opportunity for improving nutrient loading by restoring buffers lies with the agriculture community, where buffers are most likely to be absent than in residential developments where such protections have been long standing. Riparian buffers required under the development review and approval process are located on private property, either on individual lots or in common open space belonging to a homeowner's association.

Due to the nature of development in Wake County, low (1 unit/ac in the non-critical area) and very low-density (1 unit /2c acres in the critical area) there is limited potential for buffer and wetlands restoration projects as these areas have already been protected by Wake County's long standing water supply watershed regulations in place since 1984.

APPENDIX A - N. C. General Statute 136-51

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[PART 2. COUNTY PUBLIC ROADS INCORPORATED INTO STATE HIGHWAY SYSTEM](#) > **§ 136-51. Maintenance of county public roads vested in Department of Transportation**Citation: **nc code 136-51***N.C. Gen. Stat. § 136-51*

General Statutes of North Carolina
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*** Statutes current through the 2011 Regular Session ***
*** Annotations current through August 10, 2012 ***

CHAPTER 136. TRANSPORTATION
ARTICLE 3. STATE HIGHWAY SYSTEM
PART 2. COUNTY PUBLIC ROADS INCORPORATED INTO STATE HIGHWAY SYSTEM

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N.C. Gen. Stat. § 136-51 (2012)

§ 136-51. Maintenance of county public roads vested in Department of Transportation

From and after July 1, 1931, the exclusive control and management and responsibility for all public roads in the several counties shall be vested in the Department of Transportation as hereinafter provided, and all county, district, and township highway or road commissioners, by whatever name designated, and whether created under public, public-local, or private acts, shall be abolished:

Provided, that for the purpose of providing for the payment of any bonded or other indebtedness, and for the interest thereon, that may be outstanding as an obligation of any county, district, or township commission herein abolished, the boards of county commissioners of the respective counties are hereby constituted fiscal agents, and are vested with authority and it shall be their duty to levy such taxes on the taxable property or persons within the respective county, district, or township by or for which said bonds or other indebtedness were issued or incurred and as are now authorized by law to the extent that the same may be necessary to provide for the payment of such obligations; and the respective commissions herein abolished shall on or before July 1, 1931, turn over to said boards of county commissioners any moneys on hand or evidences of indebtedness properly applicable to the discharge of any such indebtedness (except such moneys as are mentioned in paragraph (a) above); and all uncollected special road taxes shall be payable to said boards of county commissioners, and the portion of said taxes applicable to indebtedness shall be applied by said

commissioners to said indebtedness, or invested in a sinking fund according to law. All that portion of said taxes or other funds coming into the hands of said county commissioners and properly applicable to the maintenance or improvement of the public roads of the county shall be held by them as a special road fund and disbursed upon proper orders of the Department of Transportation.

Provided, further, that in order to fully carry out the provisions of this section the respective boards of county commissioners are vested with full authority to prosecute all suitable legal actions.

Nothing in this section shall prevent a county from participating in the cost of rights-of-way, construction, reconstruction, improvement, or maintenance of a road on the State highway system under agreement with the Department of Transportation. A county is authorized and empowered to acquire land by dedication and acceptance, purchase, or eminent domain and make improvements to portions of the State highway system lying within or outside the county limits utilizing local funds that have been authorized for that purpose. The provisions of G.S. 153A-15 apply to any county attempting to acquire property outside its limits. All improvements to the State highway system shall be done in accordance with the specifications and requirements of the Department of Transportation.

HISTORY: 1931, c. 145, s. 7; 1933, c. 172, s. 17; 1957, c. 65, s. 11; 1973, c. 507, s. 5; 1977, c. 464, s. 7.1; 2007-428, s. 3.

NOTES: EDITOR'S NOTE. --In bringing forward Public Acts 1931, c. 145, s. 7, to appear as this section of the General Statutes, the paragraph formerly designated as subsection (a) was omitted, but the reference to it in the present second paragraph of the section was retained.

EFFECT OF AMENDMENTS. --Session Laws 2007-428, s. 3, effective August 23, 2007, added the last paragraph.

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Highways

CASE NOTES

JURISDICTION OVER CARTWAY PROCEEDINGS. --The Act of 1931 incorporated in this section discloses no legislative intent to withdraw from the Board of Commissioners of Buncombe County jurisdiction over cartway proceedings instituted under the provisions of Chapter 328, section 18, Pub. Local Laws of 1923. *Merrell v. Jenkins*, 242 N.C. 636, 89 S.E.2d 242 (1955).

CITED in *In re Edwards*, 206 N.C. 549, 174 S.E. 505 (1934); *Grady v. Grady*, 209 N.C. 749, 184 S.E. 512 (1936); *Cahoon v. Roughton*, 215 N.C. 116, 1 S.E.2d 362 (1939); *Moore v. Clark*, 235 N.C. 364, 70 S.E.2d 182 (1952); *Reynolds v. J.C. Critcher, Inc.*, 256 N.C. 309, 123 S.E.2d 738 (1962).

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PART 2. COUNTY PUBLIC ROADS INCORPORATED INTO STATE HIGHWAY SYSTEM > § 136-51. Maintenance of county public roads vested in Department of Transportation

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APPENDIX B - N.C General Statute 136-66.1

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Tutorial](#)Service: **Get by LEXSTAT®**TOC: General Statutes of North Carolina Annotated, Constitution, Court Rules & ALS, Combined > / . . . / >
ARTICLE 3A. TRANSPORTATION SYSTEMS IN AND AROUND MUNICIPALITIES > § 136-**66.1. Responsibility for streets inside municipalities**Citation: **N.C. Gen. Stat. § 136-66.1***N.C. Gen. Stat. § 136-66.1*

General Statutes of North Carolina
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*** Statutes current through the 2011 Regular Session ***
*** Annotations current through August 10, 2012 ***

CHAPTER 136. TRANSPORTATION
ARTICLE 3A. TRANSPORTATION SYSTEMS IN AND AROUND MUNICIPALITIES

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N.C. Gen. Stat. § 136-66.1 (2012)

§ 136-66.1. Responsibility for streets inside municipalities

Responsibility for streets and highways inside the corporate limits of municipalities is hereby defined as follows:

(1) The State Highway System. -- The State highway system inside the corporate limits of municipalities shall consist of a system of major streets and highways necessary to move volumes of traffic efficiently and effectively from points beyond the corporate limits of the municipalities through the municipalities and to major business, industrial, governmental and institutional destinations located inside the municipalities. The Department of Transportation shall be responsible for the maintenance, repair, improvement, widening, construction and reconstruction of this system. These streets and highways within corporate limits are of primary benefit to the State in developing a statewide coordinated system of primary and secondary streets and highways. Each highway division shall develop an annual work plan for maintenance and contract resurfacing, within their respective divisions, consistent with the needs, inasmuch as possible, as identified in the report developed in accordance with G.S. 136-44.3. In developing the annual work plan, the highway division shall give consideration to any special needs or information provided by the municipalities within their respective divisions. The plan shall be made available to the municipalities within the respective divisions upon request.

(2) The Municipal Street System. -- In each municipality the municipal street system shall consist of those streets and highways accepted by the municipality which are not a part of the

State highway system. The municipality shall be responsible for the maintenance, construction, reconstruction, and right-of-way acquisition for this system.

(3) Maintenance of State Highway System by Municipalities. -- Any city or town, by written contract with the Department of Transportation, may undertake to maintain, repair, improve, construct, reconstruct or widen those streets within municipal limits which form a part of the State highway system, and may also, by written contract with the Department of Transportation, undertake to install, repair and maintain highway signs and markings, electric traffic signals and other traffic-control devices on such streets. All work to be performed by the city or town under such contract or contracts shall be in accordance with Department of Transportation standards, and the consideration to be paid by the Department of Transportation to the city or town for such work, whether in money or in services, shall be adequate to reimburse the city or town for all costs and expenses, direct or indirect, incurred by it in the performance of such work. The city or town under contract with the Department shall develop an annual work plan for maintenance of the State highway system consistent with the needs, inasmuch as possible, as identified in the report developed in accordance with G.S. 136-44.3. The annual work plan shall be submitted to the respective division engineers and shall be mutually agreeable to both parties.

(4) If the governing body of any municipality determines that it is in the best interest of its citizens to do so, it may expend its funds for the purpose of making any of the following improvements on streets that are within its corporate limits and form a part of the State highway system:

- a. Construction of curbing and guttering.
- b. Adding of lanes for automobile parking.
- c. Constructing street drainage facilities which may by reasonable engineering estimates be attributable to that amount of surface water collected upon and flowing from municipal streets which do not form a part of the State highway system.
- d. Constructing sidewalks.
- e. Intersection improvements, if the governing body determines that such improvements will decrease traffic congestion, improve safety conditions, and improve air quality.

In exercising the authority granted herein, the municipality may, with the consent of the Department of Transportation, perform the work itself, or it may enter into a contract with the Department of Transportation to perform such work. Any work authorized by this subdivision shall be financed entirely by the municipality and be approved by the Department of Transportation.

The cost of any work financed by a municipality under this subdivision may be assessed against the properties abutting the street or highway upon which such work was performed in accordance with the procedures of either Article 10 of Chapter 160A of the General Statutes or any charter provisions or local acts applicable to the particular municipality.

HISTORY: 1959, c. 687, s. 1; 1969, cc. 798, 978; 1973, c. 507, s. 5; 1975, c. 664, s. 3; 1977, c. 464, s. 7.1; 1987, c. 747, s. 2; 1993 (Reg. Sess., 1994), c. 690, s. 1; 1995, c. 163, s. 14; 2005-382, s. 2.

NOTES: EDITOR'S NOTE. --Session Laws 2009-266, s. 22, effective August 1, 2009, substituted "Transportation Systems" for "Streets and Highways" in the Article heading.

EFFECT OF AMENDMENTS. --Session Laws 2005-382, s. 2, effective September 13, 2005, added the last three sentences to subdivision (1); and added the last two sentences to

subdivision (3).

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Highways

CASE NOTES

DEPARTMENT IS RESPONSIBLE FOR CITY STREET IN STATE SYSTEM. --When a city street becomes a part of the State highway system, the State Highway Commission (now Department of Transportation) is responsible for its condition thereafter to the same extent as if originally constructed by it; and this applies to the fill and culvert as well as to the surface areas of the highway. *Sherrill v. North Carolina State Hwy. Comm'n*, 264 N.C. 643, 142 S.E.2d 653 (1965).

This section and G.S. 160-54 (now repealed) and 136-93 indicate that the State Highway Commission (now Department of Transportation) is under a statutory obligation with reference to the construction, maintenance and repair of all city streets, including culverts which support city streets, which constitute a part of the State highway system. *Milner Hotels, Inc. v. City of Raleigh*, 271 N.C. 224, 155 S.E.2d 543 (1967).

REASONS FOR DELETION OF STREET FROM STATE HIGHWAY SYSTEM. --When read together, this section and G.S. 136-66.2 and 136-66.3 indicate that a municipal street or road is included within the State highway system because it possesses certain characteristics that distinguish it from other streets in the municipality. From the language in the applicable statutes, these characteristics relate primarily to the function served by the particular street. In contrast, public roads not within municipalities are part of the State highway system not because of their function, but because of their geographic location outside the corporate limits of a municipality. Thus, there is a qualitative distinction between roads which are a part of the State highway system because they are not within a municipality and roads which are in a municipality but are nevertheless part of the State highway system because of the function they serve. It follows logically that the reasons justifying deletion of a street from the State system and incorporating it into a municipality system will vary according to the reasons why it was in the State system to begin with. *City of Raleigh v. Riley*, 64 N.C. App. 623, 308 S.E.2d 464 (1983).

MUNICIPALITY MAY NOT CONTRACT TO TAKE OVER OBLIGATIONS OF DEPARTMENT. --This section and G.S. 160-54 (now repealed) and 136-93 do not authorize a municipality, in the absence of specific legislative authority, to contract to take over the responsibilities of the State Highway Commission (now Department of Transportation) with reference to the construction, maintenance and repair of city streets and supporting culverts which constitute a part of the State highway system. *Milner Hotels, Inc. v. City of Raleigh*, 271 N.C. 224, 155 S.E.2d 543 (1967).

CITY NOT RESPONSIBLE FOR CONTROLLED ACCESS AREAS. --All areas within the boundaries of the "controlled access" area are part of the State Highway system and were excepted from contract between the city and NCDOT; thus, city was not responsible for dangerous conditions within the "controlled access" areas. *Eakes v. City of Durham*, 125 N.C. App. 551, 481 S.E.2d 403 (1997).

LIABILITY OF CITY WHEN MAINTENANCE CONTRACTED. --An individual user of a street, which is part of the State highway system, who sustains personal injuries or property damage as the result of a dangerous condition of such street, cannot maintain an action for damages against a city which contracted with the Department of Transportation to repair or remove such condition and then did nothing whatsoever about it. *Matternes v. City of Winston-Salem*, 286 N.C. 1, 209 S.E.2d 481 (1974).

LIMITED LIABILITY OF CITY WHEN STREET BECOMES PART OF STATE SYSTEM. --When a city

street becomes a part of the State highway system, the Board of Transportation is responsible for its maintenance thereafter which includes the control of all signs and structures within the right-of-way. Therefore, in the absence of any control over a State highway within its border, a municipality has no liability for injuries resulting from a dangerous condition of such street unless it created or increased such condition. *Shapiro v. Toyota Motor Co.*, 38 N.C. App. 658, 248 S.E.2d 868 (1978).

CITY HAD NO RESPONSIBILITY FOR MAINTENANCE OR CONDITION OF TRAFFIC SIGNAL. -- Where the portions of roads in question were part of the state highway system, and as such, the responsibility of the N.C. Department of Transportation (NCDOT), apart from its contract with the NCDOT, city had no responsibility for the maintenance or condition of the traffic signal in question. *Colombo v. Dorrity*, 115 N.C. App. 81, 443 S.E.2d 752, cert. denied, 337 N.C. 689, 448 S.E.2d 517 (1994).

Trial court did not err in granting a town and municipal employees summary judgment in a driver's action alleging that they negligently failed to establish the proper road design, speed limit, or traffic control devices on the street where the accident occurred because the driver failed to produce any evidence that the town and employees owed a legal duty to regulate the design, site distance, speed limit, or any other features of the street, and there was no evidence that the view on the street where the accident occurred was obstructed; the driver was able to see a stop sign in time to stop at an intersection, and she failed to produce any evidence of a defect in the condition of the street or any question about the adequacy of the stop sign to alert drivers of the need to stop. *Blackwell v. Hatley*, 202 N.C. App. 208, 688 S.E.2d 742 (2010).

CITED in *Coleman v. Burris*, 265 N.C. 404, 144 S.E.2d 241 (1965); *General Greene Inv. Co. v. Greene*, 48 N.C. App. 29, 268 S.E.2d 810 (1980); *Town of Emerald Isle ex rel. Smith v. State*, 320 N.C. App. 640, 360 S.E.2d 756 (1987); *Estate of Jiggetts v. City of Gastonia*, 128 N.C. App. 410, 497 S.E.2d 287 (1998); *State v. Hopper*, 205 N.C. App. 175, 695 S.E.2d 801 (2010).

OPINIONS OF THE ATTORNEY GENERAL

NO RETROACTIVE APPLICATION TO ALLOW PAYMENT FOR. --See opinion of Attorney General to Mr. Hobart Brantley, Spring Hope Town Attorney, 40 N.C.A.G. 515 (1970).

USE OF POWELL BILL FUNDS. --Powell Bill funds may not be used for drainage purposes generally but may be used to pay for a portion of the cost of drainage facilities on a State highway system street which is necessary to provide for drainage arising from streets in the municipal street system for which the municipality is responsible. Opinion of Attorney General to Mr. William S. Withers, 41 N.C.A.G. 656 (1971).

MAINTENANCE OF STREETS AND HIGHWAYS. --Municipalities have the duty and responsibility of constructing and maintaining streets and highways on the Municipal Street System and the Department of Transportation has the duty and responsibility to maintain streets and highways on the State Highway System. See opinion of the Attorney General to Mr. Ralph D. Karpinos, Town Attorney, Chapel Hill, 58 N.C.A.G. 17 (Feb. 26, 1988).

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66.1. Responsibility for streets inside municipalities

Citation: **N.C. Gen. Stat. § 136-66.1**

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APPENDIX C –

List of Wake County On-site Single Family Subsurface Septic Systems

Wake County
On-site single family subsurface septic systems
01/10/07 - 07/02/12

PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1708795849	1.08	4705 SARATOGA FALLS LN
1709951916	0.90	11308 ROYAL AMBER WAY
1803001647	2.01	1233 OLD WEAVER TRL
1709955677	0.91	2108 CADENZA LN
1811286132	0.94	1613 WILDHURST LN
1811483632	1.09	1420 WILDHURST LN
0890341673	1.47	1504 BARONY LAKE WAY
1803796137	0.37	Not built.
1802189300	0.61	1100 KALWORTH RD
1709686313	1.46	121 DARTMOOR LN
0890852180	2.28	1237 BARCLAY MANOR WAY
1709852064	1.19	1916 CADENZA LN
1709096238	1.23	5963 BRYN BROOKE DR
1822542026	0.71	2053 MONTHAVEN DR
0881619672	0.74	12824 RIVER DANCE DR
0874743196	1.73	4229 OLD WEAVER TRL
0799182008	2.29	10528 BYRUM WOODS DR
0798541662	0.92	2416 SMOKERISE CT
1803711876	0.70	6505 MOUNTAIN OAKS WAY
1709953993	0.93	2105 CADENZA LN
0891702911	1.23	1085 TACKETTS POND DR
1810311044	2.40	12300 BIRCHFALLS DR
0798448614	0.92	2432 SMOKERISE CT
1802073939	1.72	1213 KALWORTH RD
0891328819	0.96	1433 TACKETTS POND DR
0891432864	1.78	7441 SEXTONS CREEK DR
0891438118	0.92	12312 THE GATES DR
0799085102	1.24	2921 CONE MANOR LN
0779713619	0.93	11406 HICKORY GROVE CHURCH RD
1832420592	0.48	7824 KENSINGTON MANOR LN
1831495938	0.62	2628 DUN LORING DR
1718197872	1.34	1009 STRADSHIRE DR
1709479675	0.91	1006 HENNY PL
0799085509	2.24	2912 CONE MANOR LN
1831125282	2.45	7516 WELCOME DR
0799890675	0.94	6085 CHARLEYCOTE DR
1708794783	0.92	4701 SARATOGA FALLS LN
0891218391	2.27	8237 WHISPERING GLEN LN
1811548178	1.30	7125 STONY HILL RD
1802365354	1.31	14001 KNOX OVERLOOK CT
1822433208	0.96	2012 SHINGLEBACK DR

Wake County
On-site single family subsurface septic systems
01/10/07 - 07/02/12

PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1802181255	1.41	1124 KALWORTH RD
1813360155	1.26	4325 HAMILTON YATES DR
1822534488	1.28	12424 ONEAL RD
0892226261	13.17	13200 GRANITE HILL TRL
1822642629	1.27	2201 FAUNTLIEE CT
0891777235	2.06	1016 TRAPPERS FOREST DR
1821958959	1.80	2224 ELMO DR
0891531274	0.84	12420 PEED RD
1831102715	4.56	2421 CRENSHAW FOREST DR
0891365073	1.42	1233 WESTERHAM DR
0891800379	1.06	1070 TACKETTS POND DR
0891339266	0.94	1440 TACKETTS POND DR
0890720462	3.27	6205 SCOTT GLEN LN
1709698992	2.19	11901 POSSUM TRACK RD
1811194238	1.50	7817 SONOMA CREEK LN
1709588485	1.60	14604 NORWOOD RD
0799898393	0.99	6072 DELSHIRE CT
1832412325	0.66	2704 ALVESTON CIR
1821737729	5.33	7513 TYNEWIND DR
1820458886	1.85	1720 TALBOT RIDGE ST
1822438106	0.73	2032 SHINGLEBACK DR
1812079684	0.91	1148 LAKE VALLEY DR
1823206211	1.38	13409 BOLD RUN HILL RD
1832410339	0.70	2706 ALVESTON CIR
0881965774	3.91	1616 BUCK WALLOW RD
1830083858	0.89	7013 THOMPSON MILL RD
1811385172	0.75	7601 RHONE CT
1802692363	1.82	5621 BELLA TERRA CT
1803911032	0.94	6300 MOUNTAIN OAKS WAY
1832078873	0.70	14236 CAREME CT
1802267202	1.25	1028 HARPERS RIDGE CT
1802187574	0.62	1017 CHADWELL ST
1822437119	0.75	2028 SHINGLEBACK DR
1822435214	0.78	2020 SHINGLEBACK DR
0799066121	1.29	2908 RYTON CT
0891421498	1.38	12229 THE GATES DR
0880772189	1.02	6832 MACTAVISH WAY
1800204812	0.99	6008 OVER HADDEN CT
1802690046	1.63	5629 BELLA TERRA CT
1811175760	0.96	1709 COLOMBARD CT
1803818231	0.70	6308 MOUNTAIN OAKS WAY

Wake County
On-site single family subsurface septic systems
01/10/07 - 07/02/12

PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
0874638608	3.07	4309 OLD WEAVER TRL
0890092880	3.55	1436 ANTIQUITY AVE
1813162421	1.22	8800 BARKSTON GARDENS LN
1709952831	0.92	2101 CADENZA LN
1831342466	4.21	2717 KEARNEY RD
0891478529	3.43	1541 BREEDERS HILL DR
1822379310	2.92	13101 POWELL RD
1832165349	0.74	2801 KIMMON WAY
0881737542	1.28	3317 BRYANT FALLS CT
1811292425	1.45	1601 RUTHERFORD HILL CT
1811189672	1.59	1628 WILDHURST LN
1822477078	1.10	8801 CANOPY CT
1811475852	2.39	1425 BENT RD
1811391003	1.07	7717 MOONDANCE CT
0891336019	0.95	1441 TACKETTS POND DR
1811284170	0.92	1617 WILDHURST LN
0799679577	0.98	2429 HENNING DR
0890831187	1.81	1008 RAINDIPPER DR
1812770192	1.57	8665 BARRETT RIDGE RD
0798087081	1.51	10009 WATERFORD CT
0788780874	2.80	2001 MACON RIDGE RD
1709957642	0.92	11313 APRIL MOON LN
1800200853	1.07	6009 OVER HADDEN CT
1822543236	0.96	12513 ONEAL RD
0891414556	1.48	12204 THE GATES DR
1810216370	2.52	12305 BIRCHFALLS DR
0799898612	1.30	6071 DELSHIRE CT
1822827203	0.93	7104 ANGLESEY CT
1803813179	1.01	6321 MOUNTAIN OAKS WAY
0799996448	1.81	1149 STONE KIRK DR
0881721199	0.84	1808 SILVER MIST CT
1803811363	0.80	6329 MOUNTAIN OAKS WAY
0881712161	1.19	12804 RIVER DANCE DR
0880651426	1.18	2005 PEARL CRESCENT CT
0891414880	0.93	12208 THE GATES DR
1802598090	2.10	5633 BELLA TERRA CT
0798445698	1.09	2440 SMOKERISE CT
1802591393	2.54	5640 BELLA TERRA CT
0789668301	0.96	11016 CREST MIST CIR
1718753975	0.81	2009 FALLS FOREST DR
1709950692	0.94	2008 NARROW WATER LN

Wake County
On-site single family subsurface septic systems
01/10/07 - 07/02/12

PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
0779980386	0.78	2608 SUNBRIAR LN
1822441289	1.09	2016 MONTHAVEN DR
1709835923	11.07	1825 BRASSFIELD RD
0881507834	2.66	12636 BOYCE MILL RD
0891421125	1.36	12217 THE GATES DR
1812266140	5.39	353 N FALLSVIEW LN
0779732828	0.69	5509 BROOK EDGE DR
1803930991	0.95	1137 FOOTHILLS TRL
1832422453	0.46	2704 LAUREL FIELD CIR
0798445309	0.96	2441 SMOKERISE CT
1832128152	1.02	2809 CALLINESS WAY
1832078115	0.74	14212 CAREME CT
1813031227	1.11	1104 OAKMAN RIDGE CT
1832337092	0.46	8005 SHORREY PL
1832339059	0.55	8012 SHORREY PL
1719350127	6.45	2332 BRASSFIELD RD
0798391147	0.93	9709 BAILEY GROVE CT
1812861684	2.26	1009 LEDBURY WAY
0779918683	2.01	5026 RED CEDAR RD
1831194665	1.90	7605 CHOUDER LN
1718759504	5.33	11201 DURANT RD
0891421023	1.14	12213 THE GATES DR
1728091239	1.91	10612 MARION STONE WAY
1800223026	2.07	6036 OVER HADDEN CT
1832328203	0.71	7813 KENSINGTON MANOR LN
1813101607	2.02	8933 WOODLIEF RD
1811288199	1.00	1605 WILDHURST LN
1831399844	0.69	7604 KENSINGTON MANOR LN
0890809215	0.96	6097 DELSHIRE CT
1811290348	0.97	1605 RUTHERFORD HILL CT
1832075499	1.01	3000 VIDAL CT
0890104824	4.99	1524 EGLANTYNE CT
1821950662	6.11	2208 ELMO DR
1822437567	0.78	2025 SHINGLEBACK DR
0881608929	1.39	3225 PARKER FALLS DR
0789989590	1.79	3000 CONE MANOR LN
1718371895	2.71	1000 CLOVELLY CT
1812877958	1.35	8605 MANGUM DAIRY RD
1800003484	1.65	1100 STONE KIRK DR
1822530785	0.67	2052 MONTHAVEN DR
1822431520	0.71	2004 SHINGLEBACK DR

Wake County
On-site single family subsurface septic systems
01/10/07 - 07/02/12

PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1812293467	1.02	8812 WOODLIEF RD
1802281254	0.60	15008 EDINSHIRE ST
0884040324	18.23	14008 BRINKLEY POND RD
0891423830	1.17	12241 THE GATES DR
0891425162	0.93	12220 THE GATES DR
0891336669	0.95	7460 SEXTONS CREEK DR
1709953494	0.92	2028 CADENZA LN
1810310928	2.01	12316 BIRCHFALLS DR
1800000302	1.31	5986 CAVANAUGH DR
1832422194	0.68	2705 LAUREL FIELD CIR
0789028189	1.11	5109 OLD TIMBER RD
1822436211	0.76	2024 SHINGLEBACK DR
0881623548	0.87	12845 RIVER DANCE DR
0890718131	1.16	6004 DELAVAL LN
1803717799	0.79	1144 HIDDEN HILLS DR
1832122570	0.94	2836 CALLINESS WAY
0789079827	0.92	2412 LORING CT
1709191235	1.77	5960 BRYN BROOKE DR
0881626105	0.98	12836 RIVER DANCE DR
1832423366	0.47	2700 LAUREL FIELD CIR
1802088964	7.22	1207 OLD WEAVER TRL
0798369306	0.92	9004 ALBATROSS CT
1810115980	3.21	1500 SPRUCE VIEW LN
1803809021	11.80	1101 TONAWANDA TRL
0799890350	1.07	6077 CHARLEYCOTE DR
1709707392	0.92	4717 SARATOGA FALLS LN
0881614476	1.61	12837 RIVER DANCE DR
0881703800	0.92	3200 PARKER FALLS DR
0890340989	2.08	1604 BARONY LAKE WAY
0779742115	0.69	5517 BROOK EDGE DR
0798369933	1.47	9020 ALBATROSS CT
1709955977	0.92	11305 MOONSPRITE WAY
0880761919	0.79	6829 MACTAVISH WAY
1811392097	0.90	7721 MOONDANCE CT
0891435425	0.98	12317 THE GATES DR
0798542302	0.97	2413 SMOKERISE CT
1832410123	0.69	2709 ALVESTON CIR
1812784107	1.42	8693 BARRETT RIDGE RD
1812865643	0.92	8509 MANGUM HOLLOW DR
1812876171	1.11	8601 MANGUM HOLLOW DR
1831491795	1.00	7505 SEPHORA CT

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1802170770	0.99	15000 MASSIMO DR
1813163699	0.90	4204 MOUNTAIN BRANCH DR
0880901750	7.95	11229 CONLEY COVE CT
0789746599	0.74	9805 NAJMA ST
1719234787	1.27	5121 DEER FOREST TRL
0881606936	2.07	3212 MOSSY RIDGE CT
0789112824	2.14	4905 HALBERD CT
1718338983	1.89	9405 SHADOW OAK WAY
1709676909	1.51	205 DARTMOOR LN
0890350184	2.04	1608 BARONY LAKE WAY
0891437065	0.92	12308 THE GATES DR
0891084296	1.40	1633 CURLY HILL CT
1812868487	1.02	8516 MANGUM HOLLOW DR
0881723193	0.97	1804 SILVER MIST CT
0798369093	0.93	8704 GLENEAGLES DR
1832143931	1.01	8917 THOMPSON MILL RD
0890109473	2.06	6205 AUTREY CT
1802281680	0.62	1008 CHADWELL ST
1709094503	1.15	1129 STONE KIRK DR
0799286541	1.05	5624 GREENEVERS DR
1822339673	0.90	2000 SHINGLEBACK DR
0883677089	18.03	2124 LIGHT HORSE TRL
0891412493	2.35	12200 THE GATES DR
0881614204	1.38	3220 MOSSY RIDGE CT
0798271963	3.23	9948 BAILEYWICK RD
0799071605	1.68	11001 SOCO GAP CT
0789666079	2.60	11020 CREST MIST CIR
1811487431	0.76	1409 WILDHURST LN
1832307198	0.69	7617 KENSINGTON MANOR LN
0789818784	0.92	5213 ATHERTON BRIDGE RD
0798460706	0.92	9016 ALBATROSS CT
1709957982	0.94	11300 MOONSPRITE WAY
1832113783	0.98	7400 PORTPATRICK CT
1813069596	2.46	8801 BARKSTON GARDENS LN
1822439114	0.85	2036 SHINGLEBACK DR
1831683586	1.06	7624 LITERARY LN
1811790210	0.71	1001 RIVERMEAD LN
0873832841	3.86	5107 CURL LN
1831493737	0.92	7509 SEPHORA CT
0883789081	1.00	15017 AIKEN RD
0891705887	0.99	1084 TACKETTS POND DR

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1709956218	0.94	11300 APRIL MOON LN
1813063641	1.41	1101 MAULDIN CIR
1709670877	1.23	208 DARTMOOR LN
1822434937	0.89	2028 MONTHAVEN DR
1802185147	0.65	1113 KALWORTH RD
0799786135	2.25	5901 CHARLEYCOTE DR
0884963231	1.93	1033 WYNDHORSE LN
0890739074	1.84	1017 RAINDIPPER DR
0890333850	1.66	1417 BARONY LAKE WAY
1802693872	0.92	5612 BELLA TERRA CT
1820692265	4.49	12112 THARRINGTON RD
0891429690	1.12	1317 TACKETTS POND DR
1709080829	1.65	1004 PAYTON CT
1709592033	1.34	6020 VALENCIA CT
1811197296	1.69	7820 SONOMA CREEK LN
0891353953	1.15	12721 SOFTBREEZE LN
1811188481	1.68	1625 WILDHURST LN
0798390340	0.94	9713 BAILEY GROVE CT
1822541120	0.70	2049 MONTHAVEN DR
1802085244	1.06	1208 KALWORTH RD
0881611782	5.50	12841 RIVER DANCE DR
0891421377	1.29	12225 THE GATES DR
1803538130	2.63	15819 NEW LIGHT RD
0880695644	0.85	12636 OLD CREEDMOOR RD
1832413016	1.00	2701 ALVESTON CIR
1831492988	0.66	2616 DUN LORING DR
0881727186	0.81	3213 BRYANT FALLS CT
1802171805	0.96	15004 MASSIMO DR
1709844465	4.65	5309 SARANT OAKS CT
1812467110	4.58	8329 WOODLIEF RD
0891426650	0.93	12236 THE GATES DR
0779741390	0.69	5521 BROOK EDGE DR
1812886626	0.94	7005 KIMI RD
1810128151	2.14	12405 BIRCHFALLS DR
0798543529	0.92	2412 SMOKERISE CT
1832079606	0.69	14232 CAREME CT
0799991505	0.92	6080 DELSHIRE CT
0799890053	1.19	5925 CHARLEYCOTE DR
1822540146	0.85	2045 MONTHAVEN DR
1822442424	0.81	2012 MONTHAVEN DR
1822433668	0.99	2005 SHINGLEBACK DR

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1822436951	0.69	2036 MONTHAVEN DR
1811481250	0.70	7600 DUCKHORN CT
0880764926	1.06	6828 MACTAVISH WAY
1822634939	0.61	2304 BERTEAU DR
0890345290	2.03	1416 BARONY LAKE WAY
1820774687	1.86	2401 ACANTHUS DR
1812085581	1.56	1125 LAKE VALLEY DR
0890220111	30.23	11906 SHOOTING CLUB RD
0789182058	2.06	2408 LORING CT
1822448240	0.73	2037 MONTHAVEN DR
1811386968	3.54	1528 WILLOWSHIRE LN
0891605129	4.13	12008 PEED RD
0891410964	1.28	12209 THE GATES DR
0891426434	0.94	12232 THE GATES DR
1800240975	1.13	2624 PLEASANT UNION CHURCH RD
0891547428	0.92	7517 MOSSY GLEN CT
0881822709	1.03	12908 GROVEHURST DR
1811287168	0.97	1609 WILDHURST LN
1821650990	2.02	12932 CAMP KANATA RD
1810220092	1.88	1605 DOGWOOD VIEW LN
0779734888	0.78	2805 BENDING TREE CT
0890465508	2.07	2344 MT VERNON CHURCH RD
1802989317	1.00	8616 TERRITORY TRL
0788588686	1.10	2037 MACON RIDGE RD
0789998962	2.79	11205 JONAS RIDGE LN
0881619302	2.25	12829 RIVER DANCE DR
1802373808	0.93	1024 NORTSHORE DR
1812878991	1.28	8601 MANGUM DAIRY RD
0881625663	0.83	12840 RIVER DANCE DR
1822546073	1.08	12508 ONEAL RD
0881637658	0.93	7304 RIDGELINE DR
1802695421	2.01	5613 BELLA TERRA CT
1803826620	1.61	8909 TIMBERLAND DR
1822447211	0.77	2033 MONTHAVEN DR
0881625853	0.72	12844 RIVER DANCE DR
0891422558	1.10	12233 THE GATES DR
1832178285	0.78	3005 BAYNAM POND DR
1831494918	0.67	2624 DUN LORING DR
1709954614	0.92	2104 CADENZA LN
0890056308	13.57	12200 SHOOTING CLUB RD
1718560461	2.00	9626 BARTONS CREEK RD

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1822142770	1.03	8717 CARRADALE CT
0890906234	1.15	5983 CAVANAUGH DR
1709440135	2.48	4008 SOARING TALON CT
1709965215	0.92	11312 MOONSPRITE WAY
0789955815	0.99	1501 LIATRIS LN
1811462068	2.78	7409 TRAIL BLAZER TRL
1832420827	0.48	8004 SHORREY PL
1709869253	0.92	11320 ROYAL AMBER WAY
0799289551	5.43	11000 CREEDMOOR RD
1812299139	4.00	1028 CAUDLE WOODS DR
0891253583	15.91	4737 WILLEVA DR
1812063725	1.65	8408 TERRITORY TRL
1718192834	1.77	10608 FIRWOOD LN
1811488467	1.02	1405 WILDHURST LN
1812982345	0.93	6013 DOONAN ST
1822445591	0.73	2005 MONTHAVEN DR
1832464794	0.76	3204 DONLIN DR
0799993308	1.42	5961 CAVANAUGH DR
1719251960	0.96	1208 ANNA BROOK LN
1831052861	0.88	2221 SECLUDED OAKS CT
1822443046	0.77	2024 MONTHAVEN DR
1822439550	0.73	2033 SHINGLEBACK DR
1822536801	1.14	12500 ONEAL RD
0881720221	1.01	1812 SILVER MIST CT
1709805633	1.22	1016 TOBIANO LN
0884716817	16.76	11925 HARRICANE RD
0881723080	0.95	1805 SILVER MIST CT
1822547114	1.11	12512 ONEAL RD
1802362506	1.29	1024 VINSON VIEW CT
1803930491	1.00	1125 FOOTHILLS TRL
1709801835	1.34	4732 SARATOGA FALLS LN
0798543299	1.04	2409 SMOKERISE CT
1831245614	1.04	2600 KEARNEY RD
1811388770	0.93	1500 PORTER CREEK CT
0874844303	5.84	4021 OLD WEAVER TRL
0891421256	1.36	12221 THE GATES DR
1803719333	0.76	1205 HIDDEN HILLS DR
0798369255	0.99	8712 GLENEAGLES DR
1811036543	1.84	1004 LAS BRISAS CT
1813250815	1.67	4305 WAVERLY WOODS PL
0891545466	0.80	7513 MOSSY GLEN CT

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1709962069	0.92	11320 MOONSPRITE WAY
1811184101	1.37	1712 COLOMBARD CT
0799089439	1.16	2905 CONE MANOR LN
1822436579	0.79	2021 SHINGLEBACK DR
0894332888	5.91	15125 OLD FELLOWSHIP RD
0874748452	3.24	4133 OLD WEAVER TRL
0891434365	0.97	12313 THE GATES DR
1709681204	1.06	128 DARTMOOR LN
1709680160	0.97	200 DARTMOOR LN
0890440023	4.46	1404 BARONY LAKE WAY
0881729968	0.99	12901 GROVEHURST DR
1803719571	0.71	6341 MOUNTAIN OAKS WAY
1811291768	1.03	1604 RUTHERFORD HILL CT
0789818479	1.13	5209 ATHERTON BRIDGE RD
1811565201	1.25	1009 HIGH TRAIL CT
0789741496	1.03	9913 MACON RD
0799484308	0.91	1404 ABBEYS GROVE TRL
0789758392	0.87	12515 TUSCAN LAKE RD
1811381790	1.01	7708 MOONDANCE CT
0891422687	0.98	12237 THE GATES DR
1812196152	1.87	8728 TERRITORY TRL
1718395474	1.91	1000 SWITHLAND CT
1822539724	0.71	8405 MONTAVISTA LN
1813031113	1.12	1100 OAKMAN RIDGE CT
0779742021	0.84	5513 BROOK EDGE DR
1822431735	1.30	2001 SHINGLEBACK DR
0881701968	1.44	3220 PARKER FALLS DR
0891766936	1.84	1017 TRAPPERS FOREST DR
1803718935	0.85	1140 HIDDEN HILLS DR
1822539889	0.66	8409 MONTAVISTA LN
1822530465	0.78	2037 SHINGLEBACK DR
0789747362	1.11	9801 NAJMA ST
1803957300	4.07	9401 HINSHAW RD
1810228896	2.27	12416 MORIAH WAY
0798369175	0.99	8708 GLENEAGLES DR
1802355937	0.99	14000 KNOX OVERLOOK CT
1813266082	1.04	4320 HAMILTON YATES DR
1811194580	1.44	7821 SONOMA CREEK LN
1802691273	1.81	5625 BELLA TERRA CT
0789993737	2.59	11212 CONLEY COVE CT
0779981279	0.52	2604 SUNBRIAR LN

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1811292679	1.26	1600 RUTHERFORD HILL CT
0891459143	0.91	12605 SCENIC DR
1802281040	0.69	15000 EDINSHIRE ST
0779873169	0.92	6825 LAURDANE RD
0881623810	0.78	12849 RIVER DANCE DR
1803817226	0.80	6316 MOUNTAIN OAKS WAY
0891338409	1.09	1448 TACKETTS POND DR
1709803510	1.45	1004 TOBIANO LN
1832413539	0.69	2805 BLUE RAVINE RD
1803715889	0.70	1000 BRIANSIDE CT
0779743346	0.93	5520 BROOK EDGE DR
1718667127	0.88	1904 CLEAR FALLS CT
1812873480	2.15	1020 LEDBURY WAY
1832353794	0.66	8497 FALKIRK RIDGE CT
1813455612	1.45	3199 BUCKHORN LN
0891432627	1.10	7445 SEXTONS CREEK DR
1802690768	0.92	5620 BELLA TERRA CT
0799082141	1.17	11008 SOCO GAP CT
0779746068	0.80	2800 BENDING TREE CT
0880909240	1.94	11213 JONAS RIDGE LN
1812877564	1.56	8612 MANGUM HOLLOW DR
0880539580	1.03	11604 APPALOOSA RUN W
0890801204	1.44	6097 CHARLEYCOTE DR
0890359144	6.82	2305 MT VERNON CHURCH RD
0799893880	1.11	1189 STONE KIRK DR
1719255503	2.79	6729 GREYWALLS LN
0798444579	0.98	2444 SMOKERISE CT
1822496484	1.82	13137 BOLD RUN HILL RD
0890513430	1.87	1213 DORLEATH CT
1811584505	2.34	7644 BUD MORRIS RD
1803819176	0.69	6304 MOUNTAIN OAKS WAY
0779736971	0.86	2801 BENDING TREE CT
0799083455	2.12	2920 CONE MANOR LN
0891548485	0.91	7521 MOSSY GLEN CT
1802280677	0.54	1012 CHADWELL ST
1822449148	0.76	2041 MONTHAVEN DR
1822438564	0.77	2029 SHINGLEBACK DR
0891319666	3.30	12201 THE GATES DR
0891086614	1.10	13620 OLD CREEDMOOR RD
0789996383	1.47	3032 CONE MANOR LN
1812172603	1.28	1149 LAKE VALLEY DR

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1709670968	1.07	204 DARTMOOR LN
1832421100	0.72	7808 KENSINGTON MANOR LN
0891459246	0.92	12609 SCENIC DR
1822543022	0.85	2057 MONTHAVEN DR
1822443638	0.80	2004 MONTHAVEN DR
1822437858	0.70	2040 MONTHAVEN DR
1822434674	0.74	2013 SHINGLEBACK DR
0891332176	0.98	7509 SEXTONS CREEK DR
0798366576	1.46	9009 ALBATROSS CT
0890699536	5.49	11416 PEED DEAD END RD
0880987526	9.19	3032 LATTYES LN
1820000279	1.87	12831 LINDLEY DR
1812715977	0.98	7841 STONY HILL RD
1822241623	0.87	12704 POWELL RD
0789850252	0.82	12517 TUSCAN LAKE RD
1812097097	1.44	8704 TERRITORY TRL
1709092898	1.39	1120 STONE KIRK DR
0890941173	3.38	2405 PLEASANT UNION CHURCH RD
1802088202	1.39	1200 KALWORTH RD
1802697865	0.92	5604 BELLA TERRA CT
1832405218	0.71	2625 DUN LORING DR
1718385268	1.45	4909 WYNNEFORD WAY
0798369489	0.93	9008 ALBATROSS CT
1832421202	0.69	2709 LAUREL FIELD CIR
0891870055	1.93	1004 TRAPPERS FOREST DR
1718655891	0.78	1901 OLD PRESERVE CT
0789658950	2.23	11017 CREST MIST CIR
1802286040	0.69	15000 WESTERFIELD RD
1812867365	0.92	8512 MANGUM HOLLOW DR
0891332568	1.09	7504 SEXTONS CREEK DR
0891436829	1.15	12337 THE GATES DR
1803715601	0.73	6409 MOUNTAIN OAKS WAY
1812985501	0.78	6016 DOONAN ST
1803815463	0.70	6324 MOUNTAIN OAKS WAY
1709963203	0.92	11316 MOONSPRITE WAY
0779985691	0.49	2601 ROCK OAK CT
0881740117	1.18	7320 RIDGELINE DR
1822442105	1.26	2020 MONTHAVEN DR
1812287838	1.86	8732 WOODLIEF RD
0891433031	1.42	12301 THE GATES DR
0891335379	0.92	1449 TACKETTS POND DR

Wake County
On-site single family subsurface septic systems
01/10/07 - 07/02/12

PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1832400811	0.72	7704 KENSINGTON MANOR LN
0799080372	1.61	2928 CONE MANOR LN
1813165418	1.09	8804 BARKSTON GARDENS LN
0799890871	0.93	1195 STONE KIRK DR
1803812689	0.75	6336 MOUNTAIN OAKS WAY
1803812235	0.95	6325 MOUNTAIN OAKS WAY
0779732726	0.69	5505 BROOK EDGE DR
1709685190	1.65	201 DARTMOOR LN
1820875446	17.07	13029 KEITH STORE RD
1811488689	1.57	7708 BUD MORRIS RD
1832088097	1.12	3008 DOMAINE DR
0880770146	1.02	6833 MACTAVISH WAY
1820519239	1.84	2032 RIVER HILL DR
1832329730	0.46	8000 SHORREY PL
1820091973	1.84	9912 HOMESTEAD LAKE DR
1709708583	0.92	4729 SARATOGA FALLS LN
1709144804	2.31	10808 WILMORE DR
1803940098	0.92	1141 FOOTHILLS TRL
1802268696	1.15	14008 WALLBERMAN DR
0799998434	1.18	1145 STONE KIRK DR
0881713350	1.80	12808 RIVER DANCE DR
1812865814	0.92	1005 LEDBURY WAY
0799290331	1.61	5820 GREENEVERS DR
0799986629	1.01	1017 PAYTON CT
1820574933	1.95	6716 GREEN HOLLOW CT
1800298016	2.05	6813 IMAGE PT
0799991770	0.92	6084 DELSHIRE CT
1812984797	0.67	6024 DOONAN ST
0891319894	1.38	12205 THE GATES DR
1709094399	1.27	5967 BRYN BROOKE DR
0799197982	2.49	1424 GOLDENGATE CT
0891723312	0.96	1116 TACKETTS POND DR
1811297084	1.86	7713 MOONDANCE CT
0891426208	0.93	12228 THE GATES DR
1803806862	1.06	6309 MOUNTAIN OAKS WAY
0881738195	0.82	3308 BRYANT FALLS CT
1831690184	1.61	7633 FULLARD DR
1813067445	1.73	1109 MAULDIN CIR
1820554184	1.87	6589 WAKEFALLS DR
1803934545	3.11	1128 FOOTHILLS TRL
1802283621	0.49	1004 CHADWELL ST

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
1718751763	0.93	2004 FALLS FOREST DR
1812756890	1.11	8420 COVINGTON RIDGE RD
1822442585	0.75	2008 MONTHAVEN DR
1831242744	0.44	2305 RACHEL DR
1832420948	0.47	8008 SHORREY PL
0799995183	1.23	1032 PAYTON CT
1719249116	3.58	6600 FIFEBREW LN
1822646371	0.69	8436 MONTAVISTA LN
0798449693	0.92	2424 SMOKERISE CT
1800153636	1.43	6408 BARTON PINES RD
0890342016	1.38	1421 BARONY LAKE WAY
1822536942	1.10	12504 ONEAL RD
1802187142	0.69	1105 KALWORTH RD
1729002125	1.85	10633 MARION STONE WAY
1803803988	1.54	6317 MOUNTAIN OAKS WAY
0799888565	0.92	5837 CAVANAUGH DR
1802965746	1.46	1004 NORTHLAKE CT
1811481632	1.02	1424 WILDHURST LN
1813142104	2.14	1224 MAULDIN CIR
1832327663	0.46	7833 KENSINGTON MANOR LN
1718659735	0.60	1909 OLD PRESERVE CT
1822445328	0.76	2009 MONTHAVEN DR
0799890468	0.95	6081 CHARLEYCOTE DR
0881634584	1.00	7301 RIDGELINE DR
0799086830	2.04	2908 CONE MANOR LN
1822748380	1.04	3341 PURNELL RD
1802973963	0.96	1005 LAKE VALLEY DR
1810883177	1.19	9804 ADLIE DR
1812879392	2.24	8608 MANGUM HOLLOW DR
1822434216	0.80	2016 SHINGLEBACK DR
1802282398	0.54	1005 CHADWELL ST
1803713744	0.70	6417 MOUNTAIN OAKS WAY
1820674092	1.83	6540 WAKEFALLS DR
0890639760	1.86	1048 RAINDIPPER DR
1822431392	1.04	2008 SHINGLEBACK DR
1802284083	0.70	15001 WESTERFIELD RD
1813301342	6.22	1021 CAUDLE WOODS DR
1802281338	0.65	1009 CHADWELL ST
1803816356	0.69	6320 MOUNTAIN OAKS WAY
1832400500	0.67	7628 KENSINGTON MANOR LN
0891605895	1.54	1040 QUIET RIDGE CIR

Wake County
On-site single family subsurface septic systems
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PIN NUMBER	CALCULATED AREA	SITE_ADDRESS
0891338836	0.92	7448 SEXTONS CREEK DR
1709264595	2.95	10913 RAVEN ROCK DR
1803706137	1.06	1108 TONAWANDA TRL
1813070282	3.36	9525 ROSEANNA DR
1813146422	1.43	1233 MAULDIN CIR
0799480227	1.30	13204 NORWOOD RD
0880904073	1.77	11220 CONLEY COVE CT
0779803336	0.44	11117 CRESTMONT DR
1822535760	1.16	12432 ONEAL RD
0779745212	1.52	2804 BENDING TREE CT
1822645193	0.51	2305 BERTEAU DR
1728090821	1.85	10625 MARION STONE WAY
1822435954	0.69	2032 MONTHAVEN DR
1813262581	1.42	4300 HAMILTON YATES DR
1822142963	0.93	8725 CARRADALE CT
1813266100	0.98	4316 HAMILTON YATES DR
1813167805	1.63	4205 MOUNTAIN BRANCH DR
1811173971	1.01	1716 COLOMBARD CT
1812861835	1.85	1013 LEDBURY WAY
0891433185	1.03	12305 THE GATES DR
0891084099	1.65	1629 CURLY HILL CT
1709865079	1.20	11321 ROYAL AMBER WAY
1709866040	0.97	11317 ROYAL AMBER WAY

APPENDIX D - Falls Lake BMP Inventory

**Wake County Inventory of Existing Structural Stormwater Devices
Falls Lake Water Supply Watershed**

Development Type	BMP Device Type	Project Name	Count of BMPs
COM	DD	THE RECREATION CTR @ STONEMOOR	1
COM	DD	WAKEMINSTER BAPTIST CHURCH ADD	1
RES	BR	STONEMOOR, LOT 46	1
RES	CS	STONEMOOR, LOT 46	1
COM	DD	BAYLEAF BAPTIST CHURCH PH 1	1
SUB	LS	TUSCAN LAKE SUBDIVISION	1
SUB	WP	TUSCAN LAKE SUBDIVISION	1
RES	GS	NORMANDY GLENN LOT 3	1
RES	CS	GREAT FALLS ESTATES LOT 29	1
RES	CS	STONEMOOR LOT 12	1
RES	BR	STONEMOOR LOT 40	1
RES	BR	HASTENTREE GOLF COMMUNITY	6
RES	DD	HASTENTREE GOLF COMMUNITY	1
RES	WP	HASTENTREE GOLF COMMUNITY	19
SUB	LS	FALLS PRESERVE SUBDIVISION	1
SUB	WP	FALLS PRESERVE SUBDIVISION	1
RES	BR	STONEMOOR S/D LOT 41	1
COM	DD	STONY HILL BAPTIST CHURCH	1
RES	IT	REGISTRY @ BAILEY LOT 94	1
SUB	DD	VICTORY CHURCH ROAD	1
SUB	LS	VICTORY CHURCH ROAD	9
SUB	LS	VICTORY CHURCH ROAD	1
SUB	DD	ROSE HALL SUBDIVISION	1
SUB	LS	ROSE HALL SUBDIVISION	1
RES	IT	STONEMOOR LOT 21	1
SUB	DD	GATES AT ETHAN'S GLEN, THE	3
SUB	PL	GATES AT ETHAN'S GLEN, THE	1
RES	BR	STONEMOOR LOT 29	1
RES	CS	GREAT FALLS ESTLOT 28	1
COM	DD	MT. BETHEL WORSHIP CENTER	1
COM	DD	DIVERSE ELECTRICAL	1
COM	GS	DIVERSE ELECTRICAL	2
SUB	LS	ROSEWOOD SUBDIVISION	5
COM	DD	HASENTREE SPORTS CLUB	2
COM	LS	HASENTREE SPORTS CLUB	2
RES	BR	LINVILLE S/D PH 1 LOT 2	1
SUB	LS	MACTAVISH PHASE 2	1

**Wake County Inventory of Existing Structural Stormwater Devices
Falls Lake Water Supply Watershed**

Development Type	BMP Device Type	Project Name	Count of BMPs
SUB	LS	MANGUM ESTATES SUBDIVISION	2
SUB	DD	HASENTREE PHASE 3	2
SUB	LS	HASENTREE PHASE 3	2
RES	BR	REGISTRY @ BAILEY FARM LOT 9	1
RES	LS	CHATSWORTH LOT 82	1
RES	BR	PARKER FALLS NORTH LOT #38	1
COM	DD	NORWOOD CVS	1
SUB	BR	ROSE HALL SUBDIVISION PHASE 2	1
SUB	DD	ROSE HALL SUBDIVISION PHASE 2	1
SUB	LS	ROSE HALL SUBDIVISION PHASE 2	2
RES	BR	STONEMOOR LOT #13	1
SUB	DD	WATERSTONE RESERVE PH 2	2
RES	VB	DEVON SUBDIVISION LOT 68	1
RES	BR	BELMONT RIDGE LOT 1	1
RES	CS	STONEMOORE LOT 57	1
SUB	DD	HASENTREE GOLF COMM. PH. 6C	1
RES	DD	SPEAS PROPERTY LOT2	1
RES	BR	KENSINGTON MANOR LOT 51	1
RES	BR	STONEMOOR LOT 57	1
RES	BR	KENSINGTON MANOR LOT 34	1
SUB	DD	SEVILLE	2
SUB	LS	SEVILLE	2
SUB	VB	SEVILLE	1
RES	BR	PARKER FALLS LOT 6	1
RES	BR	BELMONT RIDGE LOT 13	1
RES	CS	GALLOWAY	1
RES	CS	RADCLIFFE LOT 6	1
RES	CS	STONEMOOR 51	1
RES	BR	BELMONT RIDGE	1
RES	BR	THE REGISTRY AT BAILEY FARM #6	1
RES	CS	REGISTRY AT BAILEY LOT 12	1
COM	WP	NEW LIFE CAMP	1
COM	WP	WALGREENS-FALLS OF THE NEUSE	1
SUB	IT	WATKINS GLEN S/D	1
RES	CS	HICKORY GROVE CHURCH RD LOT 22	2
RES	CS	CHATSWORTH PH 3, LOT 86	1
RES	GS	STONEMOOR LOT 39	3

**Wake County Inventory of Existing Structural Stormwater Devices
Falls Lake Water Supply Watershed**

Development Type	BMP Device Type	Project Name	Count of BMPs
RES	BR	STONEMOOR, LOT 55	2
RES	BR	BARONY LOT 17	1
COM	DD	BAYLEAF FIRE STATION #36 DORM	1
RES	DD	REGISTRY @ BAILEY PH2 LOT 33	1
SUB	CS	HASENTREE PHASE 11	1
SUB	LS	HASENTREE PHASE 11	1
SUB	VB	HASENTREE PHASE 11	1
COM	LS	ANNIE LOUISE WILKERSON, MD NAT	4
RES	BR	STONEMOOR LOT 47	1
SUB	DD	POWELL TRACT-PHASE 1	1
SUB	DD	POWELL TRACT-PHASE 2	3
RES	GS	PARKER FALLS LOT 2	3
RES	CS	STONEMOOR LOT 64	1
RES	DD	STONEMOOR LOT 64	1
COM	LS	CREEDMOOR VILLAGE SHOPPING CEN	1
COM	BR	CREEDMOOR VILLAGE SHOPPING CEN	6