# Lower Yadkin Pee-Dee River Basin Restoration Priorities 2009

Ecosystem Enhancement Program

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This document was updated by Anjie Ackerman, Central Watershed Planner. January 2009

**Cover Photo: Crooked Creek, Union County**

## Introduction

This document, prepared by the North Carolina Ecosystem Enhancement Program (EEP), presents a description of Targeted Local Watersheds (TLWs) within the Yadkin Pee-Dee River Basin. This is an update of the original document developed in 2003, *Yadkin Pee-Dee River Basin Watershed Restoration Plan.*

This plan focuses on the Lower Yadkin Pee-Dee River Basin (USGS Catalog Units 03040103, 03040104, 03040105, 03040201, 3040202). The original plan selected 26 watersheds to be targeted for stream, wetland and riparian buffer restoration and protection and watershed planning efforts. This plan presents an additional 25 TLWs identified in the Lower Yadkin Pee-Dee River Basin.

This document is a supplement to the Yadkin Pee-Dee River Basin *Watershed Restoration Plan* (2003) and draws information from the *2008 Draft Yadkin Pee-Dee River Basinwide Water Quality Plan* developed by the North Carolina Division of Water Quality (DWQ). This document provides a quick overview of EEP, the criteria EEP uses to select new TLWs and then describes the newly selected TLWs.

In past documents, watersheds were delineated by the DWQ "sub-basin" units and the smaller TLWs were defined by USGS 14-digit hydrologic unit (HU). In this document, the watersheds are defined by the USGS 8-digit cataloging units (CUs) and the TLWs continue to be defined by the USGS 14-digit hydrologic unit.

## What is a River Basin Restoration Priority?

*North Carolina General Statute 143-214.10* charges EEP to pursue wetland and riparian restoration activities in the context of basin restoration plans, one for each of the 17 major river basins in the State, with the goal of protecting and enhancing water quality, fisheries, wildlife habitat, recreational opportunities and preventing floods. This document fulfills EEP's charge to update our report on restoration planning in the Yadkin-Pee Dee River Basin.

EEP develops River Basin Restoration Priorities (RBRPs) to guide its mitigation activities within each of the major river basins. The RBRPs delineate specific watersheds that exhibit a need for restoration and protection of wetlands, streams and riparian buffers. These priority watersheds, or Targeted Local Watersheds (TLWs), are 14-digit hydrologic units which receive priority for EEP watershed planning and project implementation funds. The TLW designation may also benefit stakeholders writing watershed improvement grants (e.g., Section 319 or Clean Water Management Trust Fund) by giving added weight to their proposals.

## Criteria for selecting Targeted Local Watersheds

EEP evaluates a variety of GIS data and resource and planning documents on water quality and habitat conditions in each river basin to select TLWs. The professional judgment and recommendations of local resource agency staff also play a critical role in targeting local watersheds. TLWs are chosen based on an evaluation of three factors—*problems*, *assets*, and *opportunities*. *Problems* reflect the need for restoration, *assets* reflect the ability for a watershed to recover from degradation and the need for land conservation, and *opportunity* indicates the potential for local partnerships in restoration and conservation work.

**Problems:** EEP evaluates DWQ use support ratings, the presence of impaired /303(d)-listed streams, and DWQ Basinwide Assessment Reports and Basinwide Water Quality Plans to identify streams with known problems. EEP also assesses the potential for degradation by evaluating land cover data, riparian buffer condition, impervious cover, and projected population increase.

**Assets:** In order to gauge the natural resource value of each watershed, EEP considers the amount of forested land, land in public or private conservation, riparian buffer condition, high quality resource waters, and natural heritage elements.

**Opportunity:** EEP reviews restoration and protection projects that are already on the ground, such as Clean Water Management Trust Fund projects, US Clean Water Act Section 319 projects, and land conservation projects. EEP also considers the potential for partnership opportunities by consulting with local, state, and federal resource agencies and conservation organizations, identifying their priority areas.

**Local Resource Professional Comments/Recommendations:** The comments and recommendations of local resource agency professionals, including staff with Soil & Water Conservation districts, the Natural Resources Conservation Service (NRCS), county planning staff, NCDENR regional staff (e.g., Wildlife Resources Commission), and local/regional land trusts and watershed organizations are considered heavily in the selection of TLWs. Local resource professionals often have specific and up-to-date information regarding the condition of local streams and wetlands. Furthermore, local resource professionals may be involved in local water resource protection initiatives that provide good partnership opportunities for EEP restoration and preservation projects and Local Watershed Planning initiatives.

## Yadkin Pee-Dee River Basin Overview

In North Carolina's portion of the Yadkin-Pee Dee River Basin, there are seven 8-digit watershed and 230 14-digit watersheds covering an area of 7,200 square miles. Improving and protecting watershed functions in the Yadkin-

Pee Dee River Basin is a multi-program effort of the State. The Ecosystem Enhancement Program (EEP) has produced this report to identify its watershed restoration and protection priorities that incorporate input at the federal, state, and local level. With this input, the restoration and protection blueprint presented should reflect broader watershed improvement efforts across the Yadkin-Pee Dee Basin.

Many waters in the Yadkin-Pee Dee River Basin have been given a use support rating of impaired by DWQ. Impaired streams are those streams not meeting their associated water quality standards in more than 10 percent of the samples taken within the assessment period. (DWQ, 2008a)

The Yadkin-Pee Dee River Basin contains several rare and endangered aquatic species, such as mussels, as well as Significant Aquatic Habitats and historical sites such as gold mines and an ancient Native American mound site.

According to the North Carolina's Population Data Center, between the years 2006 and 2030, population for the portion of the Yadkin-Pee Dee River Basin located within North Carolina is expected to grow from the present approximately 2.7 million residents to more than 3.9 million residents, an approximately 47-percent increase. Most county populations in counties wholly or partial contained in the Yadkin-Pee Dee river basin will grow significantly between 2000 and 2030. County growth rates over this period range from slight decreases in Richmond and Anson Counties to a staggering 184 percent increase in Union County. If development patterns follow the trends expected, urban land use may increase by over 350 percent in Union County by 2030. Cabarrus, Davie, Iredell, and Mecklenburg Counties are projected to nearly double in population over the same period. Such an increase in developed land poses a significant threat to water quality and stream health because it will be accompanied by a similar increase in impervious surfaces. (DWQ, 2008b) The housing, roads, and other infrastructure needed to accommodate this growth will also put a strain on the environment and impact streams and wetlands. Through this update, EEP is being proactive in setting priorities for protecting and restoring threatened resources.

## Yadkin Pee-Dee River Basin Restoration Goals

Based on an assessment of existing watershed characteristics and resource information, EEP has developed restoration goals for the Yadkin Pee-Dee River Basin. The goals have been broken down by 8-digit CU, in order to better describe more specific goals. The goals reflect EEP's focus on restoring wetland and stream functions such as maintaining and enhancing water quality, restoring hydrology, and improving fish and wildlife habitat.

**03040103**

This CU includes the Yadkin River as well as the lower portion of High Rock Lake and all of Badin Lake and accounts for approximately 17 percent of the basin's area at 1,190 square miles. Approximately 57 percent of this watershed remains forested and another 27 percent is agricultural, with approximately 13 percent of the area developed. (Homer, 2004) This watershed is within multiple counties including Forsyth, Davidson, Randolph, Rowan, Montgomery, and Stanly. There are several municipalities throughout this watershed, including portions of High Point and Asheboro, as well as Salisbury, Lexington and Thomasville. Development and growth is expected to continue in this region for many years to come.

Several streams in this CU are classified as impaired by DWQ for poor aquatic life, including the Yadkin River, Swearing Creek, Town Creek, Lick Creek and Cabin Creek. These waters are potentially being impaired by both point and non-source point pollutants, such as wastewater and runoff. For information on DWQ use support ratings please see: http://h2o.enr.state.nc.us/basinwide/Neuse/2008/documents/UseSupportMethodology.pdf. For further information regarding DWQ recommended management strategies for these impairments please review the 2008 Draft Basinwide Water Quality Report: http://h2o.enr.state.nc.us/basinwide/Neuse/2008/Yadkin2008.htm. In addition, DWQ has performed several special studies within this CU and they can be accessed at the above link.

Through this evaluation EEP has identified 12 of the 33 hydrologic units within this CU, comprising an area of approximately 551 square miles, as TLWs. This CU has opportunities for both restoration and protection as there are high existing resource values in much of the southern portions of the CU, as well as the previously mentioned growth trends in the upper portions.

EEP initiated a Local Watershed Plan in the Upper Uwharrie in 2005. However, the continuation of this planning effort is on hold. The initial planning documents can be viewed at: http://www.nceep.net/services/lwps/Uhwarrie/uwharrie.pdf.

EEP goals for CU 03040103 include the continuation of watershed improvements efforts already ongoing, protection of valuable wildlife resources, improved management of stormwater runoff to these waters and mitigation of impacts resulting from urbanization in the area. In addition, contributing to the restoration of water quality in DWQ-identified impaired streams is a priority.

**03040104**

This CU includes Little River, Big Mountain Creek, portions of the Pee Dee River, including Lake Tillery and Blewett Falls Lake and accounts for

approximately 12 percent of the basin's area at 862 square miles. The vast majority of this CU remains forested (72 percent), with approximately 21 percent under agricultural practices and only six percent identified as urban. (Homer, 2004) This watershed is located within several counties including Randolph, Montgomery, Stanly, Richmond and Anson. Much of this CU is within the Morrow Mountain State Park and the Uwharrie National Forest.

There are several streams that are classified as impaired by DWQ for poor Aquatic Life including the Pee Dee River, Brown Creek, and Little Mountain Creek. These waters are potentially being impaired by both point and non-source point pollutants, such as wastewater and runoff. For further information regarding DWQ recommended management strategies for these impairments, please review the Basinwide Water Quality Report: http://h2o.enr.state.nc.us/basinwide/Neuse/2008/Yadkin2008.htm. In addition, DWQ has performed several special studies within this CU and they can be accessed at the above link.

Through this evaluation EEP has identified 11 of the 27 hydrologic units within this CU, comprising an area of approximately 399 square miles, as TLWs. This CU has a range of opportunities for both restoration and protection due to high existing resource values in much of the CU including, as previously mentioned, the State Park and National Forest. In addition, impaired streams are present, indicating opportunities for restoration and improvements to stormwater management.

EEP initiated a Local Watershed Plan in the Mountain and Little Mountain watersheds in 2003. Continuation of this planning effort also is on hold. The Fact Sheet for this plan (and a link to the Phase I report) can be viewed at: http://www.nceep.net/services/lwps/Mountain_Creek/NEW_L_Mountain.pdf.

EEP identified goals for CU 03040104 include the continuation of watershed improvement efforts already ongoing, protection of valuable natural resources and development of local partnerships that will work together to implement management strategies for stormwater impacts.

**03040105**

This CU includes the Rocky River watershed and major tributaries including Coddle Creek, Dutch Buffalo Creek, Irish Buffalo Creek, Big Bear Creek, Long Creek, Richardson Creek and Lanes Creek, and accounts for approximately 20 percent of the basin's area at 1,417 square miles. Approximately 43 percent of this watershed remains forested and another 40 percent is agricultural, with approximately 16 percent of the area developed. (Homer, 2004) The area within this CU is destined to grow extensively as a result of its close proximity to the Charlotte metropolitan area. This CU lies within the counties of Iredell, Mecklenburg, Union, Rowan, Cabarrus, Stanly,

and Anson. Population projections identify Union, Cabarrus, Mecklenburg and Iredell as the counties receiving the most population growth in the river basin in coming decades, accounting for almost 950,000 additional residents by 2030. If development patterns follow the trends expected, urban land use may increase by over 350 percent and a population growth of 184 percent is expected in Union County by 2030. (DWQ, 2008b) These facts make restoration and improvement in the CU a priority as well as a challenge. EEP has identified 23 of the 43 watersheds within this CU, comprising an area of approximately 865 square miles, as TLWs.

EEP completed the Upper Rocky River Local Watershed Plan in the CU in 2004. The Fact Sheet for this plan (and related documents) can be accessed online at:
http://www.nceep.net/services/lwps/Clarke_Creek/Upper_Rocky.pdf.

DWQ has found that many waters within this CU are classified as impaired for poor Aquatic Life including the Rocky River, Stewarts Creek, Clear Creek, Coddle Creek, Clarke Creek, Mallard Creek, Reedy Creek, Goose Creek, Duck Creek, North Fork Crooked Creek, Beaverdam Creek, Richardson Creek and Lanes Creek. These waters are potentially being impaired by both point and non-source point pollutants, such as wastewater and runoff. For further information regarding DWQ recommended management strategies for these impairments please review the Basinwide Water Quality Report:
http://h2o.enr.state.nc.us/basinwide/Neuse/2008/Yadkin2008.htm

This CU contains three watersheds with significant aquatic species:

- Goose Creek/Duck Creek Watershed hosts six rare mollusks: Carolina heel splitter, creeper, notched rainbow, eastern creek shell, Carolina creekshell, and Atlantic pigtoe.
- South Fork Crooked Creek hosts three rare mussel species, with Carolina creekshell (federal species of concern and state endangered) and Savannah lilliput being highly significant.
- Lanes Creek hosts one rare mayfly, the Carolina darter, and the Carolina creekshell.

The Reed Gold Mine State Historic Site is also located within this watershed, in southeast Cabarrus County.

Many mussel and insect species are considered important water quality indicators since they can be extremely sensitive to changes in their environment (i.e. water temperature, flow, pollutants and sediment). Protection of these declining populations is not only important to the survival of these valuable resources, but also is an indication of the decline of the overall health and stability of the watershed.

EEP goals for CU 03040105 include improved management of stormwater runoff to these waters, protection of valuable threatened and endangered wildlife resources and continued mitigation of impacts resulting from rapid urbanization of the area. In addition, contributing to the restoration of water quality in DWQ-identified impaired streams is a priority.

EEP has initiated a new Local Watershed Plan (LWP) in the Goose and Crooked Creeks in the summer of 2008. Some of the objectives of this LWP include identification of the possible stressors in this watershed and management strategies to reduce their impacts, as well as targeting restoration and preservation opportunities that can provide the greatest water quality benefit and ecological uplift to this watershed. The Fact Sheet for this plan can be accessed online at:
http://www.nceep.net/services/lwps/Goose_Crooked/Goose_Crooked_1_07.pdf

**03040201**

This CU is located in Anson and Richmond counties and includes Pee Dee River, Jones Creek, and Hitchcock Creek. This CU accounts for approximately seven percent of the basin's area at 484 square miles. Approximately 64 percent of this watershed remains forested, while 25 percent is identified as agriculture and approximately 10 percent as developed. (Homer, 2004)

There are several streams that are classified as impaired by DWQ for poor Aquatic Life including Hitchock Creek, Falling Creek, and Marks Creek. Hitchock Creek is also identified as impaired for Fish Consumption. These waters are potentially being impaired by both point and non-source point pollutants, such as wastewater and runoff. For further information regarding DWQ-recommended management strategies for these impairments please review the Basinwide Water Quality Report:
http://h2o.enr.state.nc.us/basinwide/Neuse/2008/Yadkin2008.htm.

Through this evaluation EEP has identified five of the 17 hydrologic units within this CU, comprising an area of approximately 241 square miles, as TLWs.

EEP identified goals for CU 03040201 include the continuation of watershed improvements efforts already ongoing, protection of valuable natural resources and development of local partnerships that will work together to implement management strategies for stormwater impacts. In addition, contributing to the restoration of water quality in DWQ-identified impaired streams is a priority.

**03040202**

This CU includes Buffalo Creek, Polecat Creek and Lynches River and is the smallest in the Yadkin-Pee Dee Basin, accounting for just 0.04 percent of the basin's area at 26 square miles. None of these waters are classified by DWQ as impaired, nor has this area experienced the growth pressures shared by much of the rest of the basin. Approximately 40 percent of this watershed remains forested, while 55 percent is identified as agriculture and approximately 4 percent as developed. (Homer, 2004) There are no TLWs identified in this CU.

The TLWs identified through this evaluation are shown below. Because of the size of the Yadkin Pee-Dee River Basin the TLWs have been split into two maps: Upper and Lower Yadkin Pee-Dee River Basin. The Upper Yadkin Pee-Dee is currently under development and the Lower is represented in Figure 1 below. Table 1 presents the datasets used in this evaluation and has information relevant to each of the TLWs selected.

# Yadkin Pee-Dee River Basin and Targeted Local Watershed Map

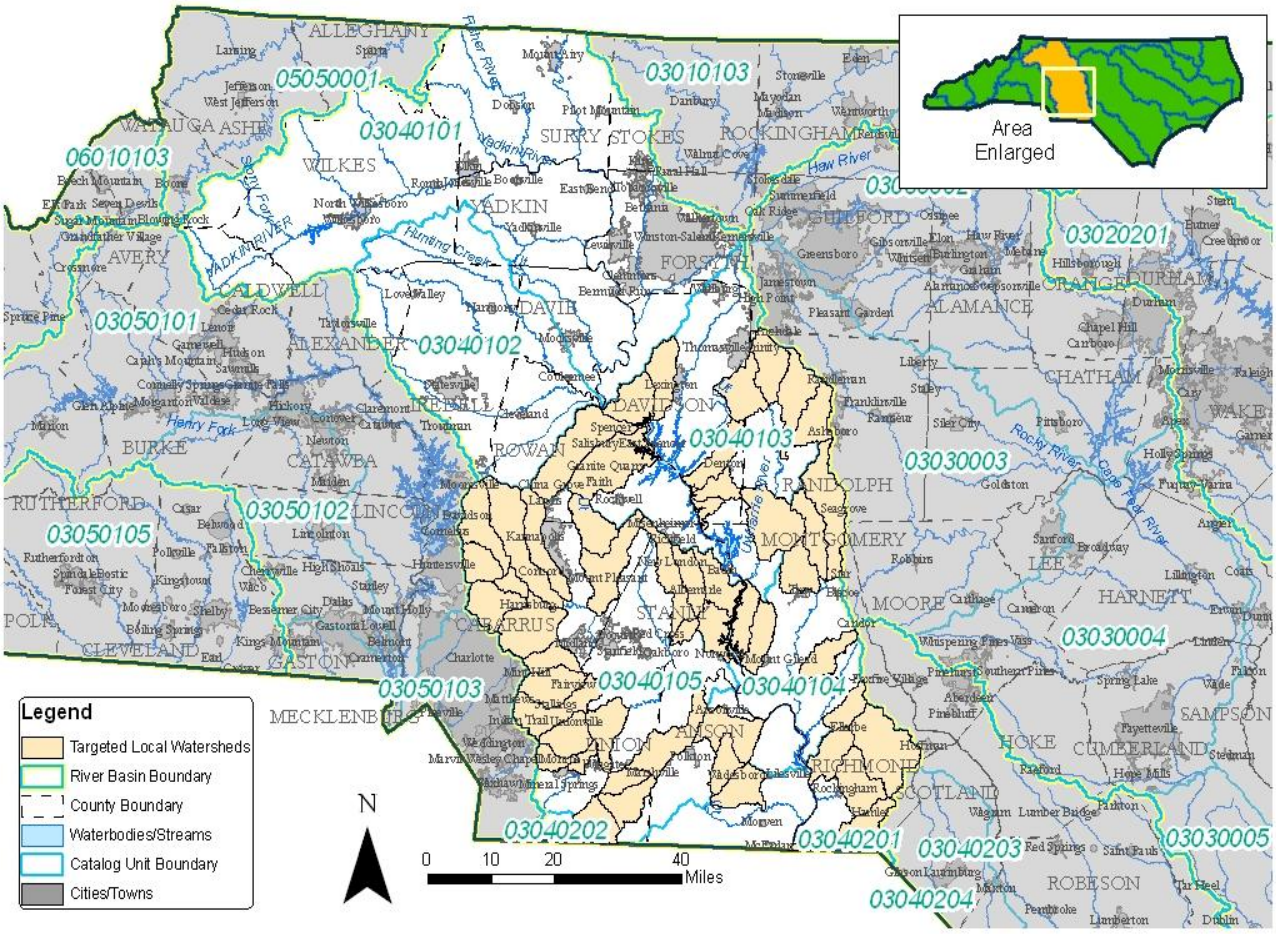



Figure 1. Lower Yadkin Pee-Dee Targeted Local Watersheds

# Table 1.Targeted Local Watershed Summary Table for the Lower Yadkin- Pee Dee River Basin

| 14-digit Hydrologic Unit | Major Streams | Area (sq mi) | % of Streams on draft 2008 303(d) List | % Imper-vious Cover | % Non-Forested Buffer | % Agriculture Land Use | Number of Animal Operations | Projected Population Change (2000-2015) | Contains WRC[1] Priority Area | HQW [2] Stream Miles | ORW[3] Stream Miles | % Under Conservation | % Forest and Wetlands | WSW[4] Stream Miles | % SNHA[5] | # of NHEOs[6] | Notes* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lower Yadkin Pee-Dee River Basin (Yad103): Yadkin River, High Rock Lake and Badin Lake | | | | | | | | | | | | | | | | | |
| 03040103010010 | Grants Creek | 84 | 11.72% | 5.82% | 33.08% | 16.89% | 24 | 0 | | 0.00 | 0.00 | 3.85 | 39.79 | 3.42 | 0.19 | 10 | 2003 TLW |
| 03040103010020 | Crane Creek | 79 | 13.47% | 4.77% | 27.64% | 16.13% | 14 | - | | 0.00 | 0.00 | 2.01 | 50.39 | 0.15 | 0.05 | 14 | 2003 TLW |
| 03040103020010 | Potts Creek | 39 | 11.51% | 2.45% | 25.71% | 21.31% | 15 | 1087 | | 0.00 | 0.00 | 1.85 | 46.63 | 0.00 | 0.66 | 3 | |
| 03040103020020 | Swearing Creek | 39 | 13.35% | 7.76% | 36.43% | 14.25% | 10 | 3015 | | 0.00 | 0.00 | 0.02 | 36.84 | 0.00 | 0.54 | 0 | 2003 TLW |
| 03040103040050 | Lick Creek | 36 | 13.07% | 1.04% | 30.93% | 26.07% | 17 | 607 | | 0.00 | 0.00 | 1.73 | 63.05 | 50.74 | 4.63 | 3 | |
| 03040103040060 | Cabin Creek | 21 | 2.08% | 0.36% | 15.70% | 12.98% | 6 | 153 | | 0.00 | 0.00 | 4.56 | 71.38 | 80.66 | 0.88 | 3 | |
| 03040103040070 | Eillis Creek | 11 | 0.00% | 0.11% | 9.75% | 7.56% | 0 | 46 | | 0.00 | 0.00 | 24.28 | 83.98 | 99.99 | 10.43 | 6 | |
| 03040103050010 | Upper Uwharrie | 41 | 0.00% | 4.26% | 24.75% | 13.74% | 6 | 1933 | Yes | 0.00 | 0.00 | 0.92 | 55.08 | 99.99 | 0.00 | 1 | 2003 TLW, LWP |
| 03040103050020 | Brier Creek | 43 | 0.00% | 1.80% | 28.10% | 20.49% | 11 | 1644 | Yes | 0.00 | 0.00 | 0.12 | 57.16 | 100.00 | 0.00 | 4 | 2003 TLW, LWP |
| 03040103050040 | Caraway Creek | 50 | 0.01% | 1.41% | 24.18% | 19.42% | 24 | 1717 | Yes | 0.00 | 0.00 | 0.50 | 63.18 | 0.00 | 6.29 | 28 | 2003 TLW, LWP |
| 03040103050050 | Back Creek | 38 | 0.00% | 3.82% | 25.64% | 16.09% | 9 | 1799 | Yes | 0.00 | 0.00 | 0.04 | 60.26 | 45.88 | 4.40 | 15 | 2003 TLW |
| 03040103050080 | Uwharrie River | 70 | 0.00% | 0.16% | 14.04% | 12.98% | 21 | 209 | Yes | 0.00 | 37.86 | 20.16 | 78.75 | 1.63 | 6.68 | 66 | |
| Lower Yadkin Pee-Dee River Basin (Yad104): Pee Dee River, Tillery Lake and Blewett Lake | | | | | | | | | | | | | | | | | |
| 03040104010010 | Mountain/Little Mountain Creeks | 37 | 8.40% | 1.50% | 32.44% | 24.70% | 15 | 353 | Yes | 0.00 | 0.00 | 16.38 | 64.93 | 84.02 | 13.91 | 29 | 2003 TLW, LWP |
| 03040104010020 | Jacobs/Gum Creek | 31 | 0.00% | 1.18% | 37.30% | 30.42% | 6 | 304 | | 0.00 | 0.00 | 0.17 | 58.17 | 99.99 | 2.48 | 7 | 2003 TLW, LWP |
| 03040104020010 | Pee Dee River | 29 | 0.00% | 0.51% | 11.95% | 5.54% | 3 | 165 | | 0.00 | 0.00 | 25.75 | 81.67 | 100.00 | 2.97 | 11 | |
| 03040104020020 | Clarks Creek | 33 | 0.61% | 0.55% | 14.29% | 11.73% | 11 | 218 | | 0.00 | 0.00 | 7.96 | 76.05 | 0.00 | 1.26 | 8 | 2003 TLW |
| 03040104030010 | Little River | 69 | 0.00% | 1.89% | 18.29% | 12.93% | 56 | 1284 | Yes | 16.43 | 0.00 | 4.00 | 68.91 | 0.00 | 3.65 | 38 | |
| 03040104030020 | West Fork Little River | 37 | 0.00% | 0.25% | 16.18% | 14.67% | 37 | 135 | Yes | 6.08 | 0.00 | 3.87 | 74.54 | 0.00 | 1.36 | 21 | |
| 03040104030030 | Densons Creek | 35 | 0.00% | 1.22% | 14.63% | 9.74% | 4 | 311 | Yes | 78.52 | 0.00 | 7.93 | 78.66 | 0.00 | 6.36 | 44 | |
| 03040104050010 | Cheek Creek | 33 | 0.00% | 0.15% | 14.34% | 12.92% | 4 | 49 | | 0.00 | 0.00 | 11.20 | 80.59 | 0.00 | 2.04 | 33 | 2003 TLW |
| 03040104061030 | Brown Creek | 48 | 27.50% | 0.39% | 16.82% | 15.01% | 19 | -36 | Yes | 0.00 | 0.00 | 18.69 | 69.49 | 0.00 | 11.78 | 15 | |

| 14-digit Hydrologic Unit | Major Streams | Area (sq mi) | % of Streams on draft 2008 303(d) List | % Imper-vious Cover | % Non-Forested Buffer | % Agriculture Land Use | Number of Animal Operations | Projected Population Change (2000-2015) | Contains WRC[1] Priority Area | HQW [2] Stream Miles | ORW[3] Stream Miles | % Under Conservation | % Forest and Wetlands | WSW[4] Stream Miles | % SNHA[5] | # of NHEOs[6] | Notes* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03040104061040 | Goulds Creek | 25 | 0.00% | 1.61% | 14.12% | 9.73% | 1 | -81 | Yes | 0.00 | 0.00 | 0.67 | 69.86 | 0.00 | 3.01 | 0 | 2003 TLW |
| 03040104080020 | Little Mountain Creek | 24 | 0.00% | 0.99% | 18.36% | 16.17% | 35 | 12 | | 0.00 | 0.00 | 0.74 | 59.89 | 15.44 | 1.07 | 3 | 2003 TLW |
| Lower Yadkin Pee-Dee River Basin (Yad105): Rocky River | | | | | | | | | | | | | | | | | |
| 03040105010010 | West Branch Rocky River | 49 | 14.27% | 2.97% | 30.22% | 21.54% | 13 | 9195 | | 0.00 | 0.00 | 0.93 | 51.45 | 0.00 | 0.00 | 5 | 2003 TLW, LWP |
| 03040105010020 | Clarke Creek | 28 | 6.00% | 4.51% | 38.47% | 18.16% | 5 | 5522 | Yes | 0.00 | 0.00 | 9.98 | 49.15 | 0.00 | 1.59 | 5 | 2003 TLW, LWP |
| 03040105010030 | Upper Rocky River | 13 | 22.95% | 15.97% | 45.70% | 18.40% | 1 | 1937 | | 0.00 | 0.00 | 0.45 | 30.18 | 0.00 | 2.64 | 5 | 2003 TLW, LWP |
| 03040105010040 | Mallard Creek | 42 | 0.02% | 15.71% | 56.90% | 7.32% | 4 | 0 | | 0.00 | 0.00 | 0.08 | 29.22 | 0.00 | 0.14 | 12 | 2003 TLW, LWP |
| 03040105010050 | Reedy Creek | 65 | 9.88% | 5.57% | 33.42% | 11.47% | 8 | 0 | Yes | 0.00 | 0.00 | 2.49 | 47.71 | 0.00 | 0.69 | 30 | 2003 TLW, LWP |
| 03040105020010 | Coddle Creek | 81 | 9.93% | 4.31% | 35.78% | 22.95% | 31 | - | Yes | 0.00 | 0.00 | 0.61 | 39.21 | 53.89 | 2.85 | 18 | 2003 TLW, LWP |
| 03040105020040 | Irish Buffalo Creek | 46 | 0.00% | 12.10% | 57.60% | 12.95% | 5 | 0 | | 0.00 | 0.00 | 0.20 | 24.96 | 20.48 | 0.01 | 2 | 2003 TLW |
| 03040105020050 | Upper Dutch Buffalo Creek | 40 | 0.00% | 0.44% | 23.91% | 21.95% | 17 | 1404 | Yes | 0.00 | 0.00 | 0.14 | 53.46 | 100.00 | 0.21 | 15 | |
| 03040105020060 | Lower Dutch Buffalo Creek | 61 | 0.00% | 0.86% | 36.66% | 31.59% | 24 | 4027 | Yes | 0.00 | 0.00 | 0.02 | 50.67 | 6.79 | 3.65 | 14 | 2003 TLW |
| 03040105030010 | Clear Creek | 25 | 0.00% | 1.66% | 25.90% | 19.74% | 6 | 3642 | | 0.00 | 0.00 | 0.59 | 55.60 | 0.00 | 0.00 | 3 | |
| 03040105030020 | Goose/Duck Creek | 42 | 11.10% | 1.96% | 34.57% | 23.01% | 13 | 8647 | Yes | 0.00 | 0.00 | 0.91 | 48.99 | 0.00 | 0.36 | 70 | 2003 TLW, LWP |
| 03040105040010 | Crooked Creek | 53 | 12.25% | 5.44% | 45.76% | 32.72% | 58 | - | Yes | 0.00 | 0.00 | 0.10 | 33.82 | 0.00 | 0.34 | 11 | 2003 TLW, LWP |
| 03040105060030 | Upper Long Creek | 45 | 0.00% | 1.01% | 44.53% | 39.29% | 31 | 437 | Yes | 0.00 | 0.00 | 0.08 | 42.35 | 0.00 | 0.53 | 7 | 2003 TLW |
| 03040105060040 | Little Long Creek | 29 | 0.00% | 6.78% | 42.67% | 24.73% | 8 | 961 | | 0.00 | 0.00 | 0.40 | 39.68 | 0.00 | 0.17 | 1 | 2003 TLW |
| 03040105060060 | Lower Little Long Creek | 10 | 20.61% | 0.53% | 47.71% | 43.93% | 7 | 57 | | 0.00 | 0.00 | 0.00 | 39.84 | 0.00 | 0.00 | 0 | |
| 03040105070020 | Middle Richardson Creek | 9 | 37.43% | 11.25% | 39.26% | 18.67% | 3 | 5266 | Yes | 0.00 | 0.00 | 0.22 | 39.26 | 0.00 | 0.00 | 2 | |
| 03040105070030 | Bearskin Creek | 15 | 0.00% | 11.20% | 42.34% | 19.23% | 7 | 10549 | Yes | 0.00 | 0.00 | 0.55 | 33.58 | 0.00 | 0.00 | 1 | |
| 03040105070050 | Stewarts Creek | 35 | 0.00% | 4.66% | 53.16% | 39.64% | 37 | 10246 | Yes | 0.00 | 0.00 | 0.00 | 28.41 | 99.65 | 0.00 | 2 | 2003 TLW |

| 14-digit Hydrologic Unit | Major Streams | Area (sq mi) | % of Streams on draft 2008 303(d) List | % Imper-vious Cover | % Non-Forested Buffer | % Agriculture Land Use | Number of Animal Operations | Projected Population Change (2000-2015) | Contains WRC[1] Priority Area | HQW [2] Stream Miles | ORW[3] Stream Miles | % Under Conservation | % Forest and Wetlands | WSW[4] Stream Miles | % SNHA[5] | # of NHEOs[6] | Notes* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03040105070060 | Lower Richardson Creek | 39 | 12.07% | 1.20% | 41.08% | 36.91% | 34 | 6035 | Yes | 0.00 | 0.00 | 0.00 | 35.67 | 0.00 | 0.00 | 5 | |
| 03040105081010 | Upper Lanes Creek | 33 | 8.99% | 0.64% | 53.25% | 49.24% | 34 | 2101 | Yes | 0.00 | 0.00 | 0.00 | 34.10 | 0.00 | 0.02 | 0 | 2003 TLW |
| 03040105081020 | Middle Lanes Creek | 33 | 23.46% | 0.49% | 41.99% | 39.07% | 30 | 1606 | Yes | 0.00 | 0.00 | 0.00 | 40.14 | 0.00 | 0.14 | 6 | 2003 TLW |
| 03040105081030 | Beaverdam Creek | 18 | 0.04% | 0.50% | 50.60% | 48.20% | 23 | 963 | | 0.00 | 0.00 | 0.00 | 35.44 | 0.00 | 0.00 | 1 | 2003 TLW |
| 03040105081040 | Lower Lanes Creek | 55 | 22.87% | 1.17% | 34.14% | 29.75% | 42 | 1703 | Yes | 0.00 | 0.00 | 0.10 | 50.90 | 0.00 | 0.20 | 5 | |
| Lower Yadkin Pee-Dee River Basin (Yad201):Pee-Dee River, Hitchcock Creek, Jones Creek | | | | | | | | | | | | | | | | | |
| 03040201010050 | Cartledge Creek | 34 | 5.39% | 0.64% | 9.95% | 7.95% | 18 | 22 | | 0.00 | 0.00 | 0.54 | 74.74 | 0.00 | 2.66 | 19 | |
| 03040201020020 | North Fork Jones Creek | 36 | 0.00% | 2.71% | 19.84% | 10.65% | 11 | -222 | | 0.00 | 0.00 | 0.00 | 63.31 | 24.98 | 0.10 | 15 | 2003 TLW |
| 03040201010010 | Hitchcock/Rocky Fork Creeks | 83 | 7.19% | 0.88% | 14.22% | 11.23% | 41 | 38 | | 0.00 | 0.00 | 35.26 | 64.46 | 100.00 | 4.36 | 162 | |
| 03040201010020 | Hitchcock/Falling Creeks | 42 | 1.75% | 6.07% | 23.80% | 13.79% | 10 | 231 | | 0.00 | 0.00 | 1.64 | 51.69 | 48.45 | 2.37 | 34 | 2003 TLW |
| 03040201010060 | Marks Creek | 41 | 14.01% | 3.69% | 16.61% | 11.77% | 7 | 79 | | 0.00 | 0.00 | 0.09 | 60.24 | 5.96 | 13.94 | 37 | 2003 TLW |

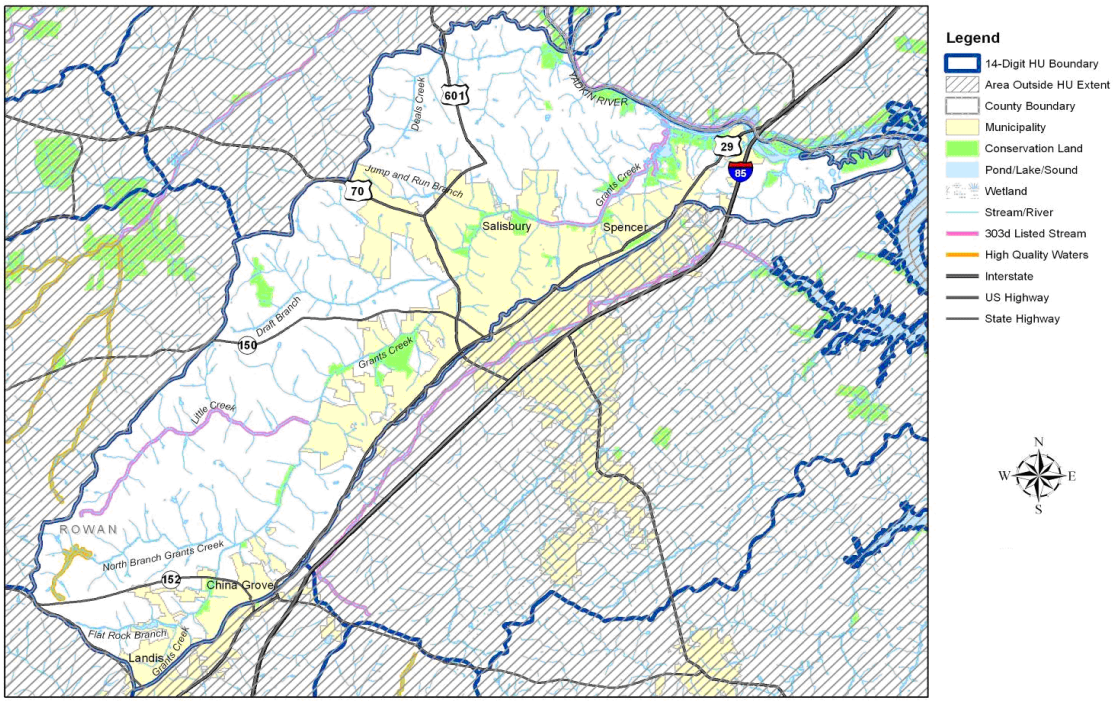
Note:
1 WRC= Wildlife Resource Commission
2 HQW= High Quality Waters
3 ORW= Outstanding Resource Waters
4 WSW= Water Supply Waters
5 SNHA= Significant Natural Heritage Area
6 NHEO= Natural Heritage Element Occurrence

## Discussion of Targeted Local Watersheds in Lower Yadkin Pee-Dee River Basin

This section presents a brief summary and map of each of the 51 TLWs that have been selected within the five CUs comprising the lower Yadkin Pee-Dee River Basin.

Grants Creek: 03040103010010

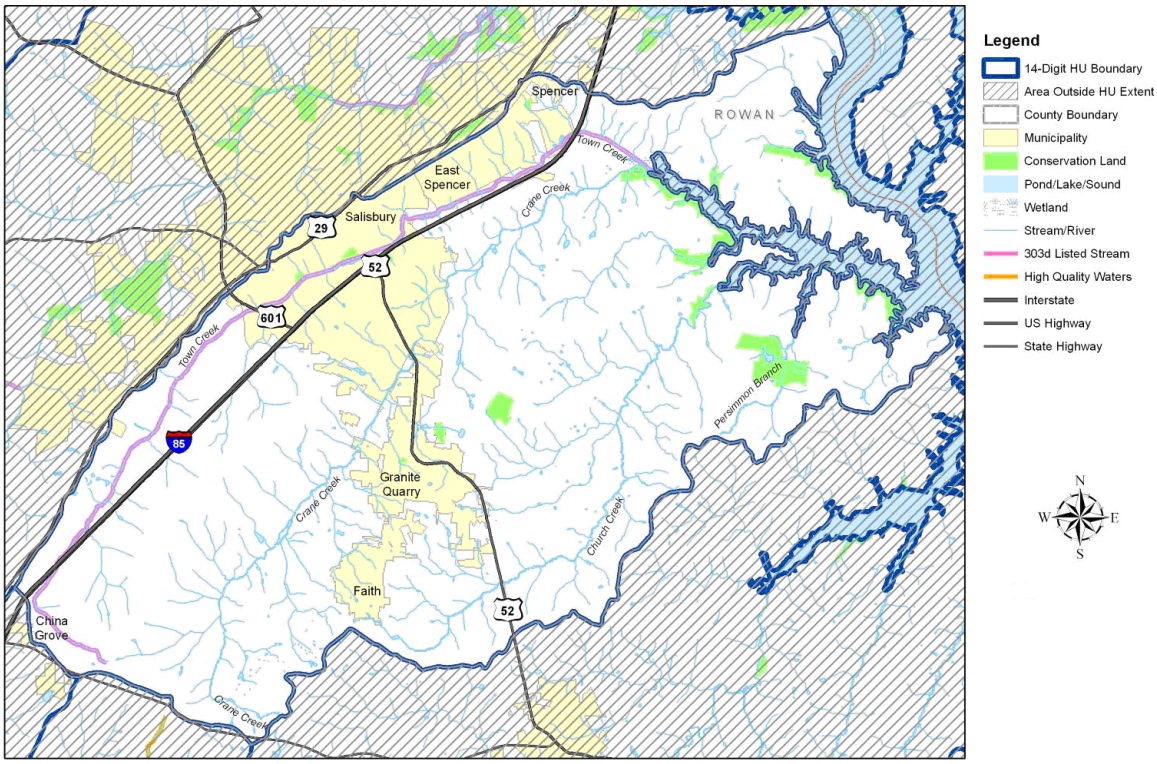
This watershed is an existing TLW and is located in area of growth and development along the I-85 corridor. It includes portions of the urban areas of Salisbury, Spencer, China Grove and Landis, portions of High Rock Lake run along the northern boarder of this watershed. Imperviousness within this watershed is at almost 6% and approximately 12% of the stream length within this watershed has been identified as impaired for Aquatic Life and Overall according to 2006 DWQ 303(d) data. Some agricultural practices, permitted dischargers and development impacts such as stormwater runoff are likely contributors to turbidity violations, fecal coliform violations, impaired biological integrity and Chlorophyll a violations within this watershed. There are over 20 animal operations located here. In addition, this watershed has valuable resources such as Natural Heritage Element Occurrences, Water Supply Waters and several types of land under protection of local municipalities, Clean Water Management Trust Fund and Land Trust for Central North Carolina, such as gamelands, preserves, local parks and farmland preservation, that make protection and restoration a priority.




Grants Creek Watershed

Crane Creek: 03040103010020

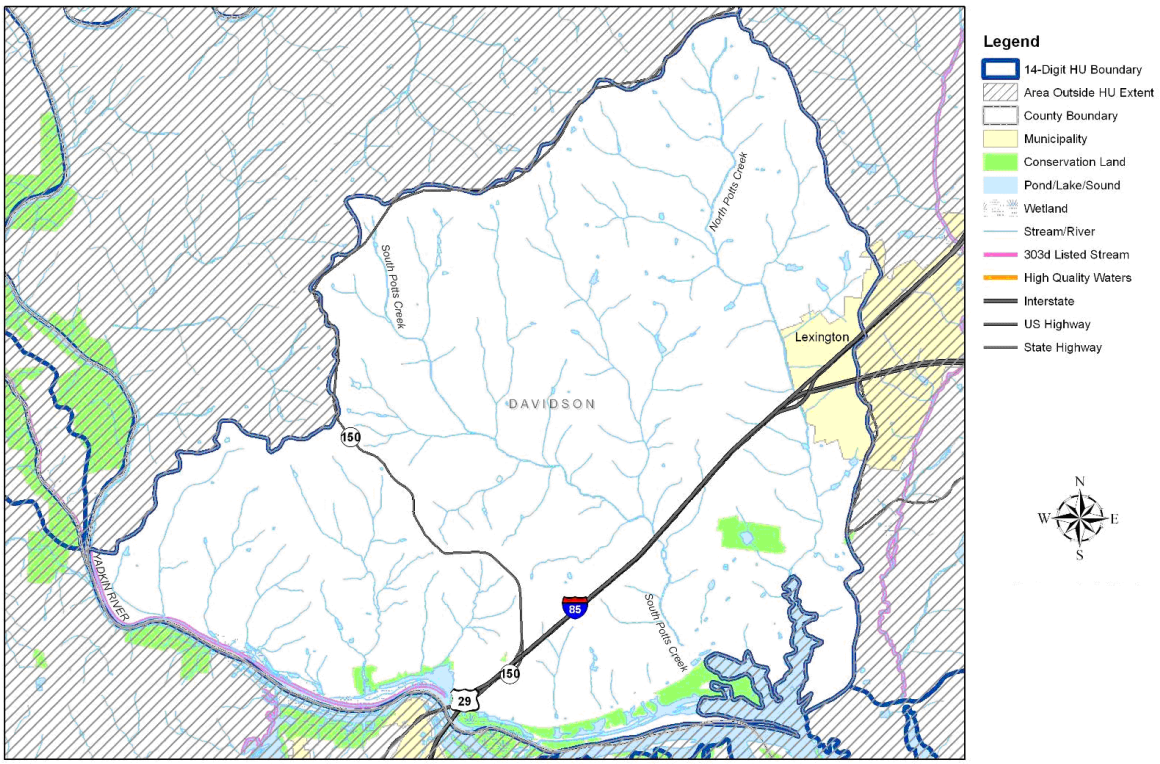
This watershed is an existing TLW and is located in area of growth and development along the I-85 corridor. It includes portions of urban Salisbury and East Spencer, as well as the communities of Granite Quarry and Faith, portions of High Rock Lake are within this watershed. Imperviousness within this watershed is approaching 5% and approximately 14% of the stream length within this watershed has been identified as impaired for Aquatic Life according to 2006 DWQ 303(d) data. Impervious surfaces and stormwater runoff are likely contributors to turbidity and chlorophyll a violations as well as impaired biological integrity within this watershed. Several animal operations are located here and approximately 16% of the watershed is in agricultural land use. In addition, this watershed has valuable resources such as Natural Heritage Element Occurrences as well as land already under conservation, including gamelands, Land Trust for Central North Carolina land, Town Creek Park and Oakland Heights Park managed by the City of Salisbury, Royal Giants Park managed by East Spencer, which makes further protection and restoration a priority.




Crane Creek Watershed

Potts Creek: 03040103020010

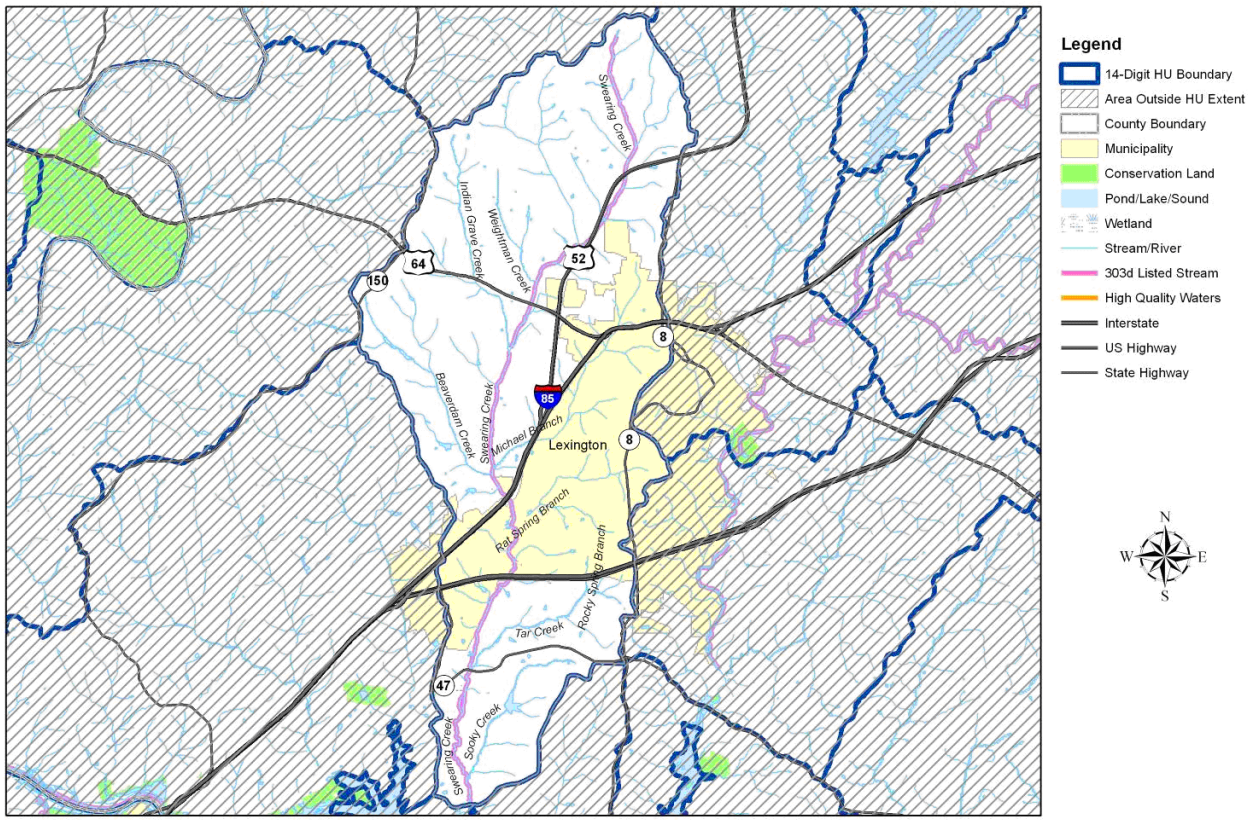
This is a newly designated TLW and is located along the I-85 corridor which is currently experiencing growth. A portion of the City of Lexington is within this watershed and High Rock Lake runs along the southern boarder. This watershed has several animal operations and has a projected population increase of over 1,000 residents by the year 2015. Approximately 12% of the stream length located in this watershed has been identified as impaired for Aquatic Life according to 2006 DWQ 303(d) data. Stormwater runoff and other development impacts are likely contributors to turbidity and chlorophyll a violations within this watershed. There are resources within this watershed such as forest and wetlands and land already under conservation, including gamelands and a Davidson County managed park, which make further protection and restoration a priority. There are several watershed improvement projects bordering this watershed which would allow for the opportunity to continue projects here and provide additional ecological benefits to the larger scale watershed.




Potts Creek Watershed

Swearing Creek: 03040103020020

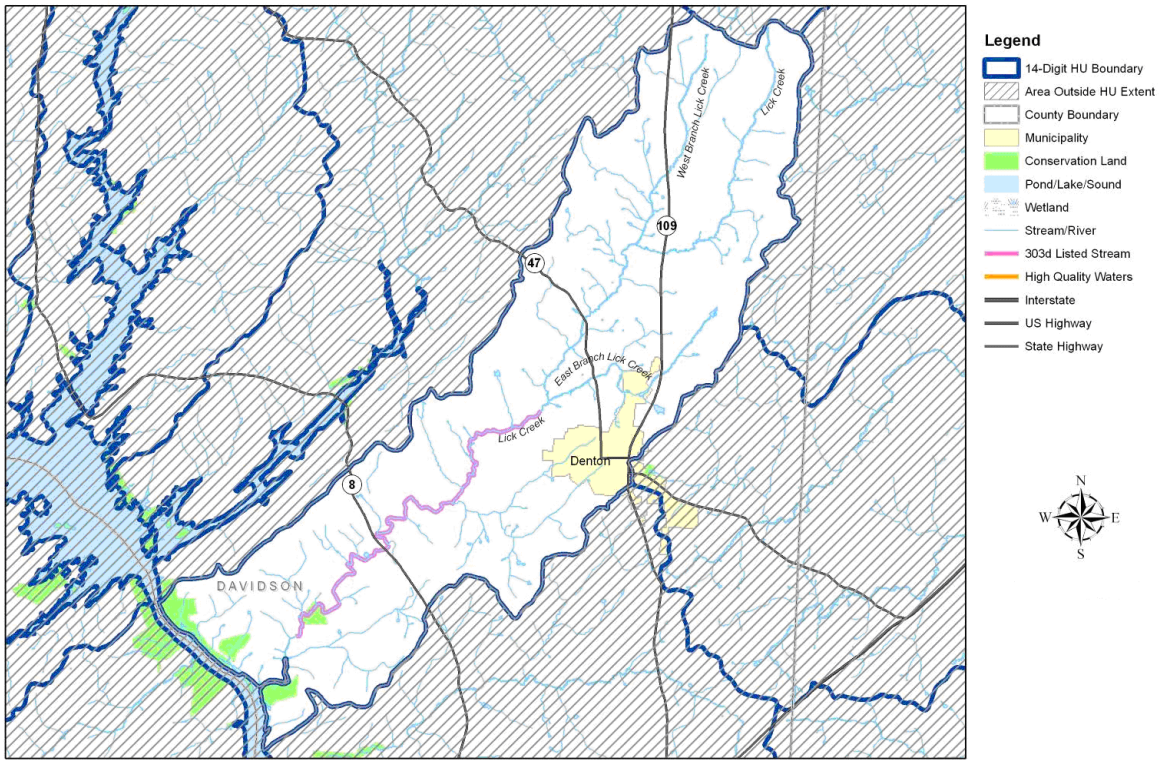
This watershed is an existing TLW and is located in area of growth and development along the I-85 corridor and includes a large portion the City of Lexington. Imperviousness within this watershed is approaching 8% and the projected population increase by 2015 is over 3,000 residents. Approximately 14% of the stream length in this watershed has been identified as impaired for Aquatic Life according to 2006 DWQ 303(d) data. Some agricultural practices and impacts from stormwater runoff are likely contributors to impaired biological integrity within this watershed. This is a watershed that was identified as a priority by local resource professionals as well.




Swearing Creek Watershed

Lick Creek: 03040103040050

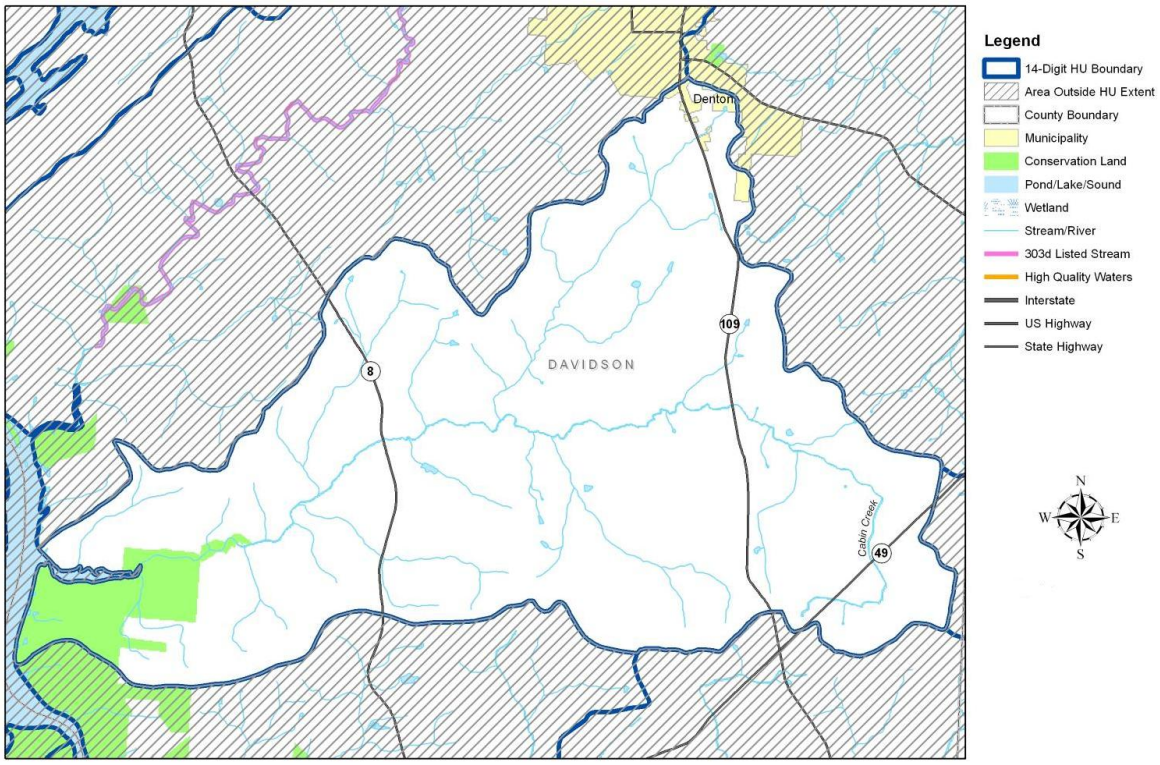
This is a newly designated TLW and is located near High Rock Lake and includes the Town of Denton. Badin dam is located in this watershed. This watershed has approximately 13% of its steam length identified as impaired for Aquatic Life according to 2006 303(d) data. Some agricultural practices and the Badin Dam are likely contributors to low dissolved oxygen within this watershed. A number of animal operations are also located within this watershed. Approximately 26% of this watershed is in agricultural land use. This watershed has over 50 miles of Water Supply Waters within it and has been indicated as a priority watershed by local resource professionals for reasons including extensive wildlife sightings. Land conserved within this watershed is protected for uses such as gamelands and archery.




Lick Creek Watershed

Cabin Creek: 03040103040060

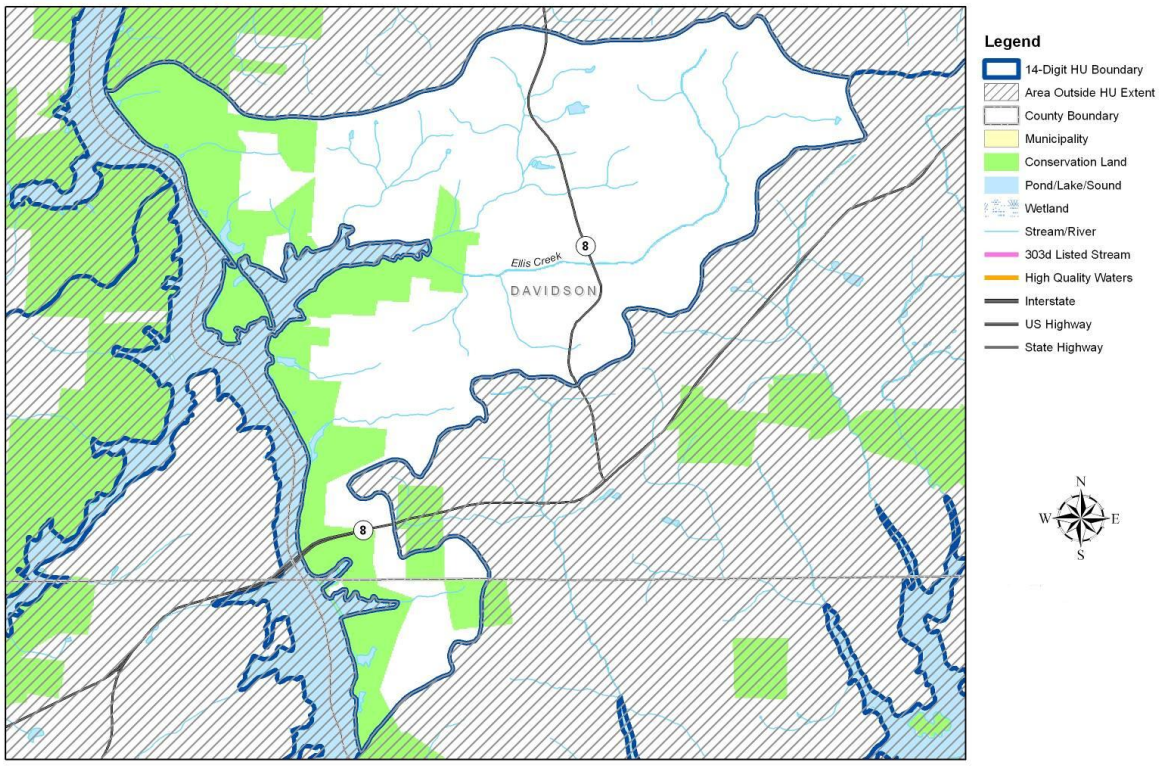
This is a newly designated TLW and has a large amount of forest and wetlands and over 80 miles of Water Supply Waters within it. A small portion of the Town of Denton is located within the northern portion of this watershed. In addition, this watershed has valuable resources such as Natural Heritage Element Occurrences and land already under conservation as gamelands that make protection and restoration a priority. Opportunities present within this watershed would likely be preservation but efforts should be made here since this watershed had the potential to protect the Yadkin River from further water quality degradation and maintain Tuckertown and Badin Lake.




Cabin Creek Watershed

Ellis Creek: 03040103040070

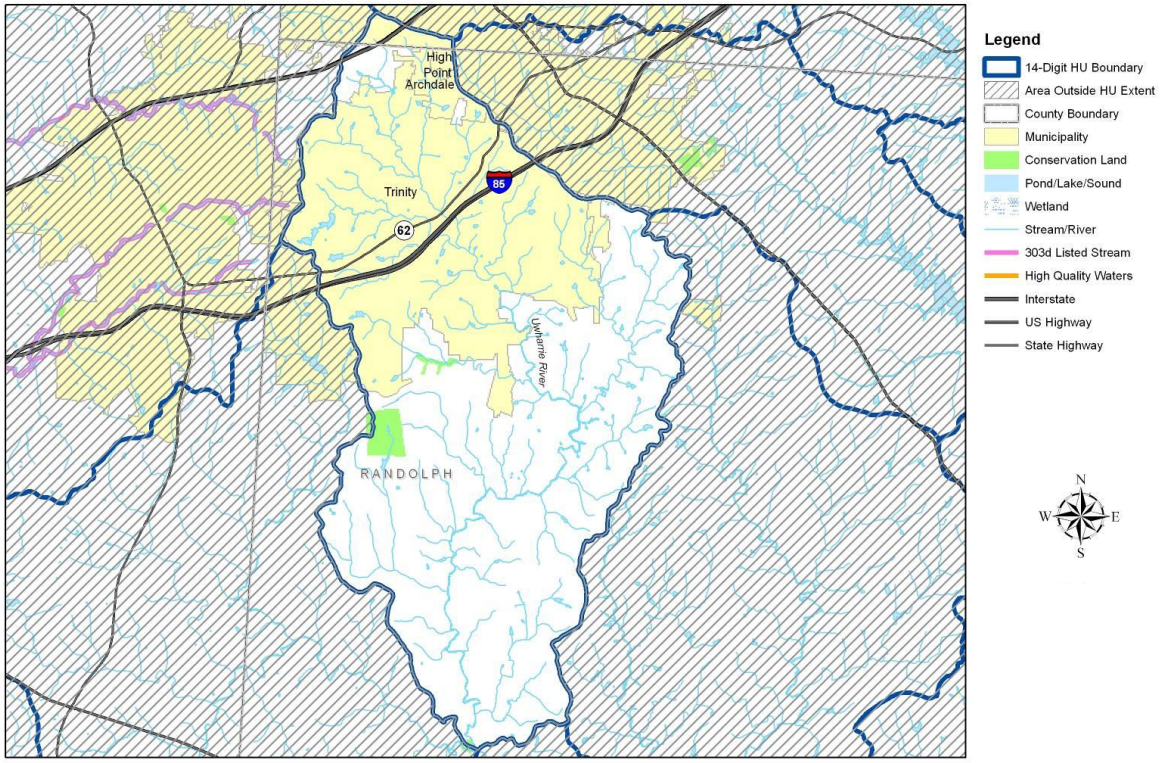
This is a newly designated TLW and is approximately 11 square miles large. This small watershed has almost 100 miles of Water Supply Waters and significant amounts of forest and wetlands and land already under conservation for uses including gamelands, archery, and Wildlife Resources Commission protection. In addition, there are several Natural Heritage Element Occurrences and Significant Natural Heritage Areas within this watershed. This watershed was indicated as a priority for local resource professionals. Opportunities present within this watershed would likely be preservation but efforts should be made here since this watershed had the potential to protect the Yadkin River from further water quality degradation and maintain Tuckertown and Badin Lake.




Ellis Creek Watershed

Upper Uwharrie: 03040103050010

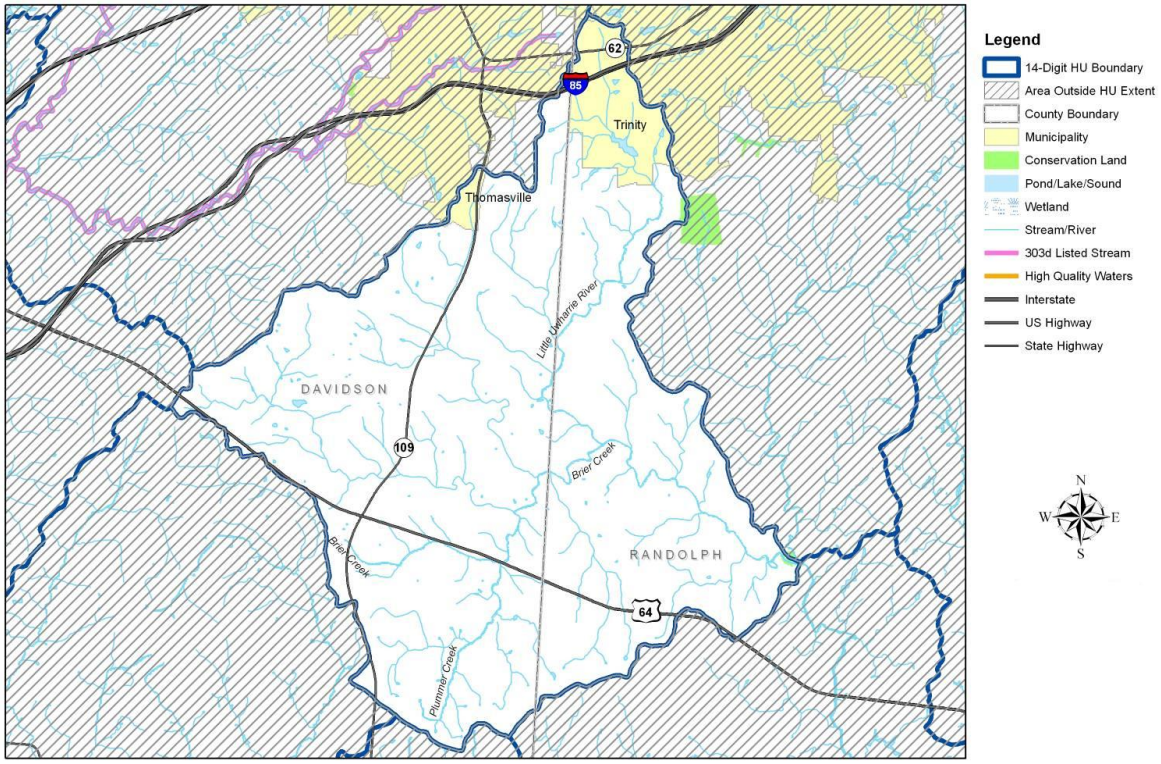
This is an existing TLW and part of the Upper Uwharrie Local Watershed Plan, which is currently on hold. A large portion of the City of Trinity and a small portion of the City of Archdale are located within this watershed. This watershed is likely to experience continued growth over the coming years with nearly an additional 2,000 residents expected by 2015. The watershed contains a Wildlife Resource Commission priority area and nearly 100 miles of Water Supply Waters as well as Land Trust for Central North Carolina land. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Upper Uwharrie Watershed

Brier Creek: 03040103050020

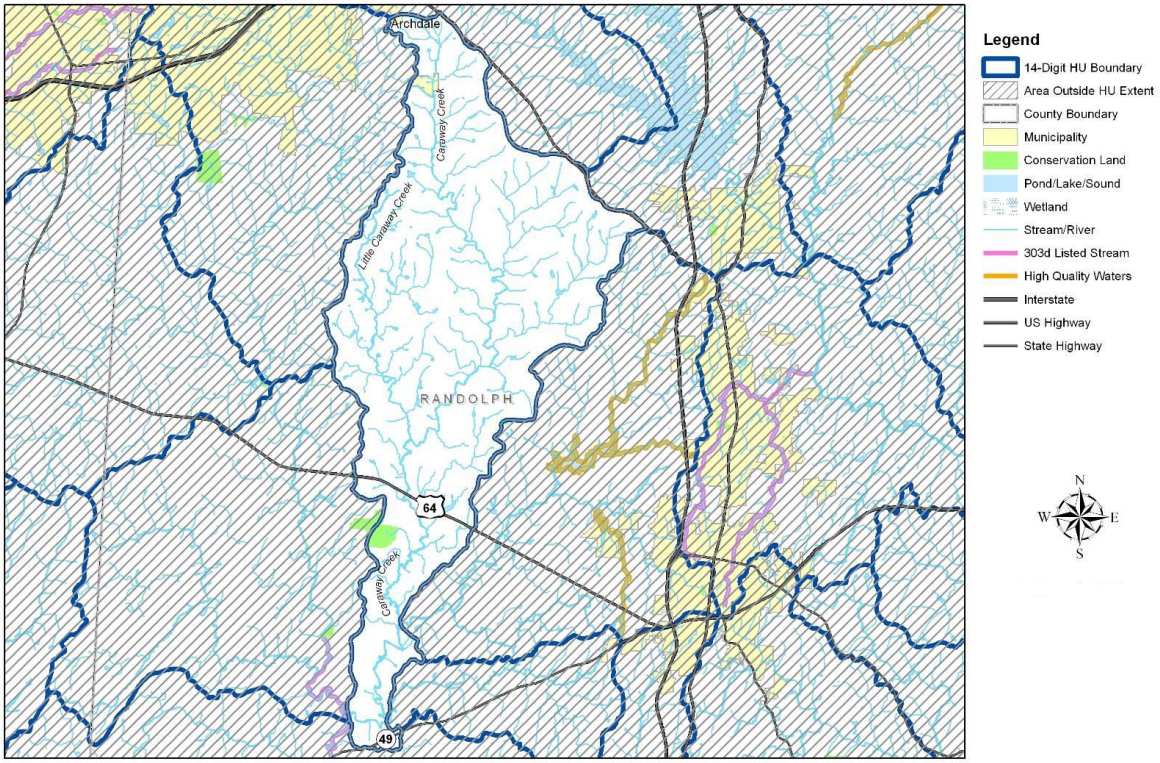
This is an existing TLW and part of the Upper Uwharrie Local Watershed Plan, which is currently on hold. Small portions of the Cities of Trinity and Thomasville are located within this watershed. This watershed is likely to experience continued growth over the coming years with an additional 1,600 residents expected by 2015. There are several animal operations within this watershed and approximately 20% of the land is used for agriculture. The watershed contains a Wildlife Resource Commission priority area and 100 miles of Water Supply Waters.




Brier Creek Watershed

Caraway Creek: 03040103050040

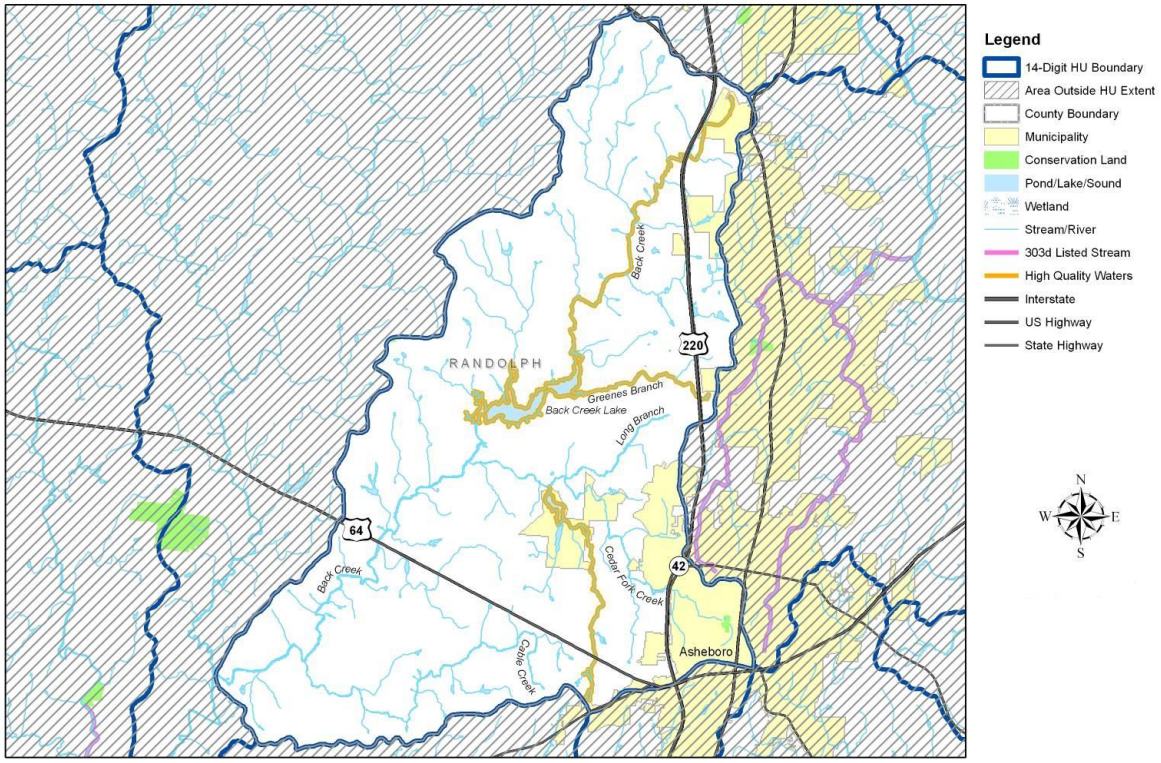
This is an existing TLW and part of the Upper Uwharrie Local Watershed Plan, which is currently on hold. This watershed is likely to experience continued growth over the coming years with an additional 1,700 residents expected by 2015. The watershed contains a Wildlife Resource Commission priority area and a significant number of Natural Heritage Element Occurrences. There are also more then 20 animal operations within this watershed and approximately 20% of the land is used for agriculture.




Caraway Creek Watershed

Back Creek: 03040103050050

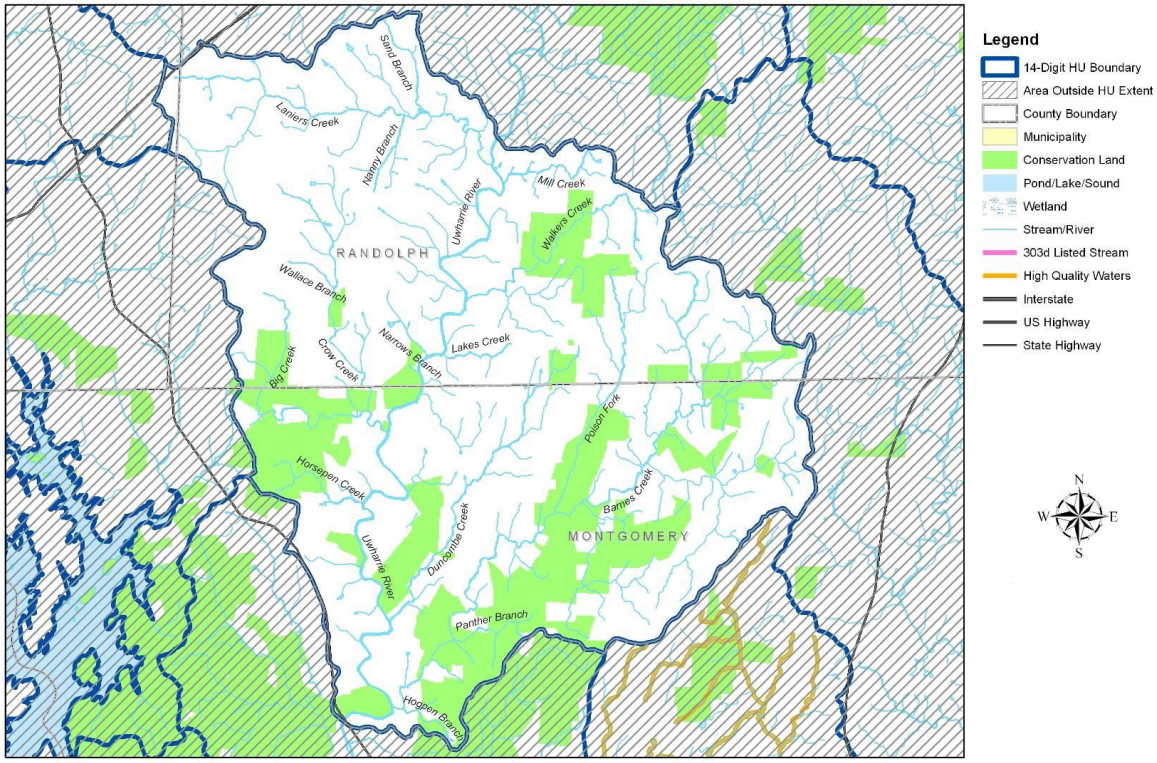
This is an existing TLW and is likely to experience continued growth over the coming years with nearly 1,800 additional residents expected by 2015. Portions of the Cities of Asheboro and Randleman are located within this watershed. Back Creek Lake is located within this watershed. The watershed contains a Wildlife Resource Commission priority area and 46 miles of Water Supply Waters, servicing the City of Asheboro, as well as several Natural Heritage Element Occurrences and a substantial amount of forest and wetlands. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Back Creek Watershed

Uwharrie River: 03040103050080

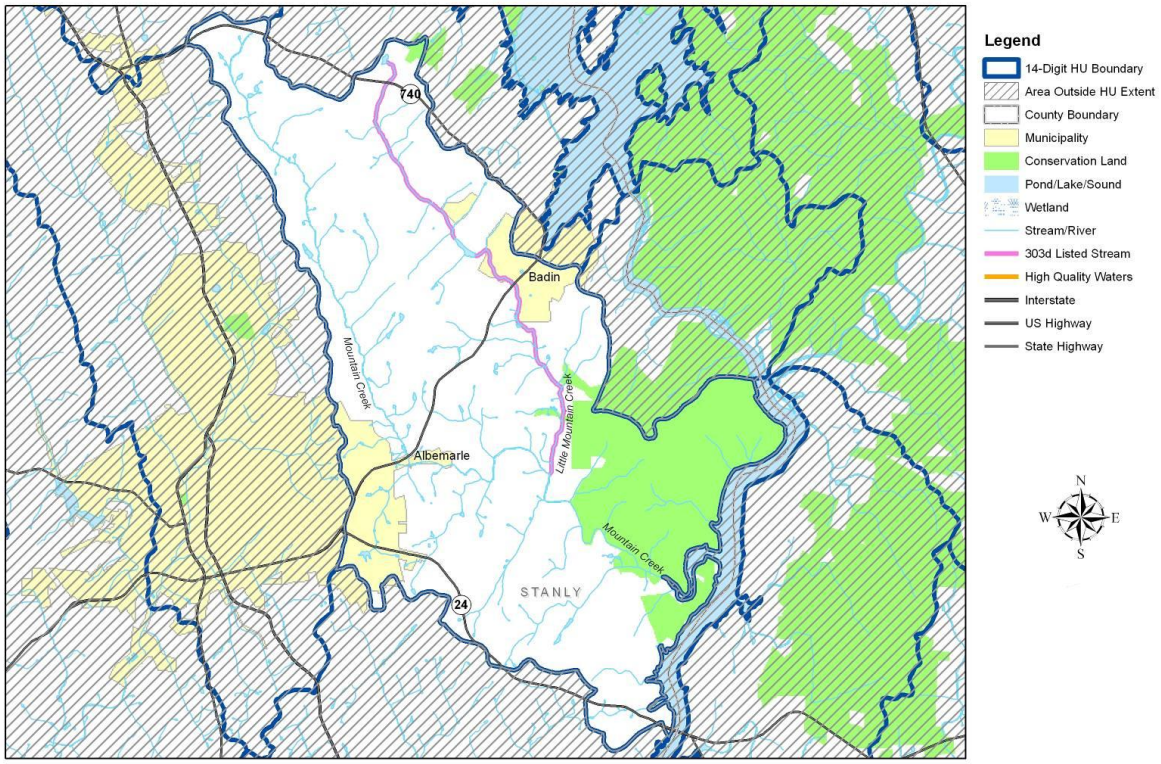
This is a newly designated TLW and it contains a Wildlife Resources Commission priority area, over 60 identified Natural Heritage Element Occurrences, almost 40 miles of Outstanding Resource Waters, a few miles of Water Supply Waters and a significant amount of land already under conservation for use as gamelands and protection by the Wildlife Resources Commission. There are over 20 animal operations within this watershed and approximately 13% of the land is used for agriculture. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift




Uwharrie River Watershed

Mountain/Little Mountain Creeks: 03040104010010

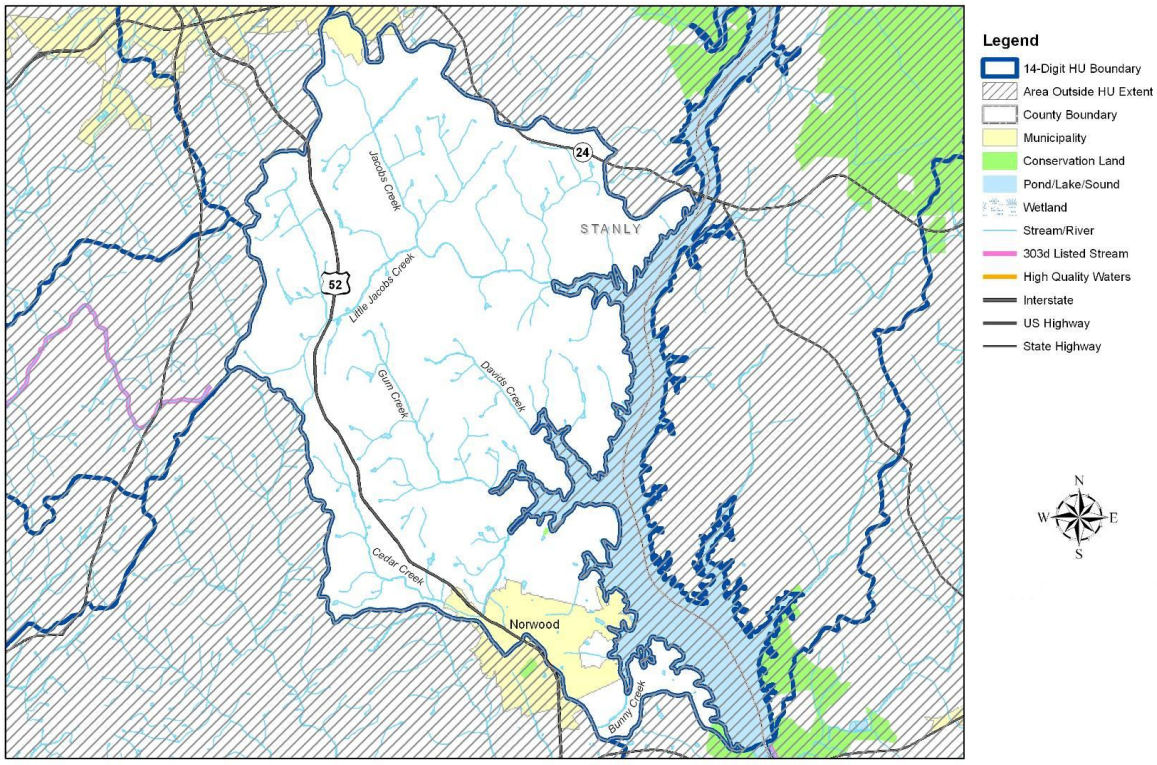
This is an existing TLW and is also the location of the Mountain, Little Mountain and Jacobs Creek Local Watershed Plan which was developed in 2004. This watershed contains portions of the Town of Badin as well as the City of Albemarle. Approximately 8% of the stream length in this watershed has been identified as impaired for Aquatic Life and Overall according to 2006 DWQ 303(d) data. Some agricultural practices as well as development impacts are likely contributors to impaired biological integrity within this watershed. There are a number of animal operations within this watershed. The watershed contains a Wildlife Resource Commission priority area, has land already under conservation, including Morrow Mountain State Park and land under Land Trust for Central North Carolina protection, and also land designated as Significant Natural Heritage Area. There are almost 30 documented Natural Heritage Element Occurrences and approximately 85 miles of Water Supply Waters.




Mountain/Little Mountain Watershed

Jacobs/Gum Creek: 03040104010020

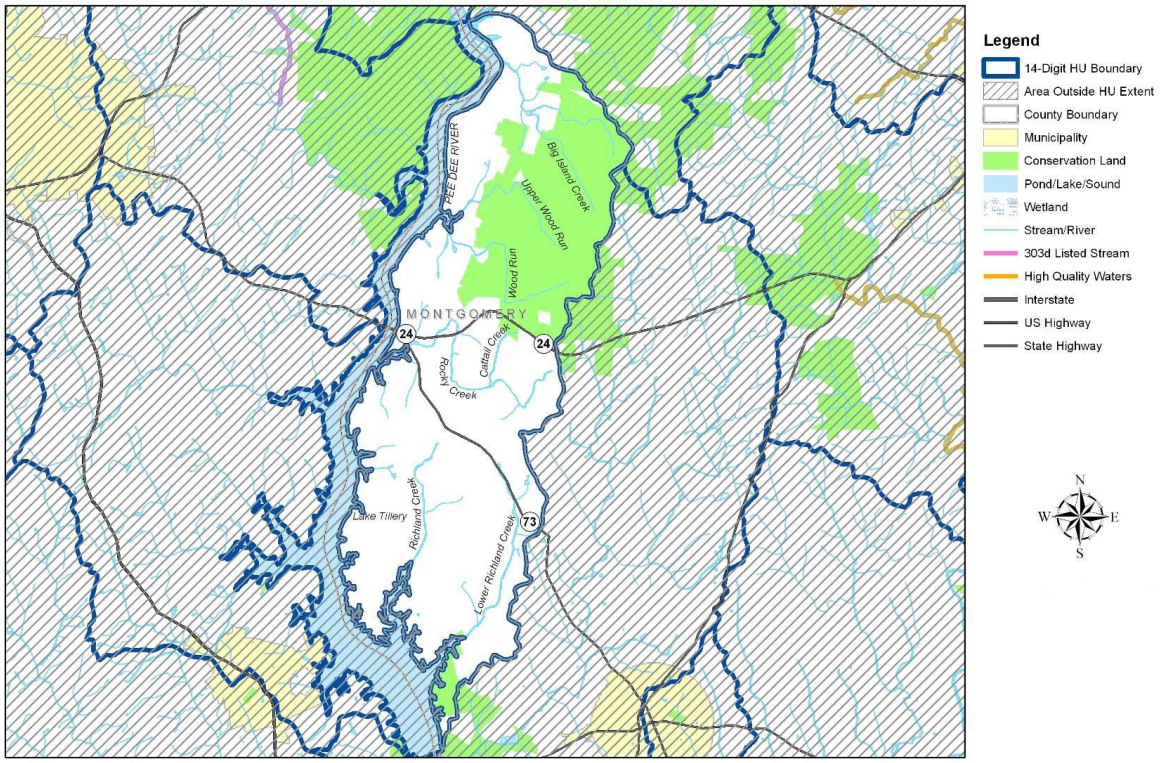
This is an existing TLW and is also the location of the Mountain, Little Mountain, and Jacobs Creek Local Watershed Plan which was developed in 2004. This watershed contains a portion of the Town of Norwood and is expected to experience growth as the 2015 projected population shows an increase of approximately 300 residents. There is land designated as Significant Natural Heritage Area, Natural Heritage Element Occurrences and approximately 100 miles of Water Supply Waters. Approximately 30% of this watershed land use is in agriculture and there are several animals operations as well. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Jacobs/Gum Creek Watershed

Pee Dee River: 03040104020010

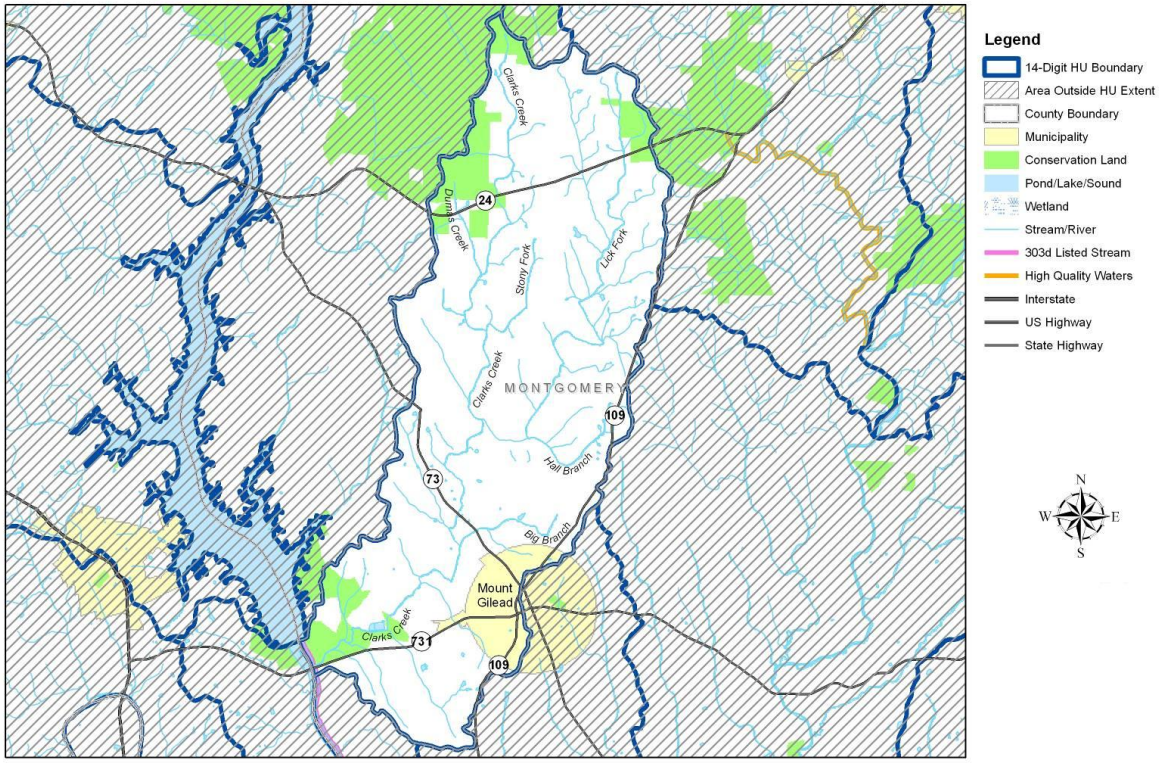
This is a newly designated TLW and is located adjacent to the Mountain, Little Mountain, Jacobs Creek Local Watershed Plan area. This watershed has land already under conservation, including gamelands and land under Wildlife Resources Commission and Land Trust for Central North Carolina protection, also there is land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences and approximately 100 miles of Water Supply Waters and a substantial amount of forest and wetlands which make further protection and restoration a priority.




Pee Dee River Watershed

Clarks Creek: 03040104020020

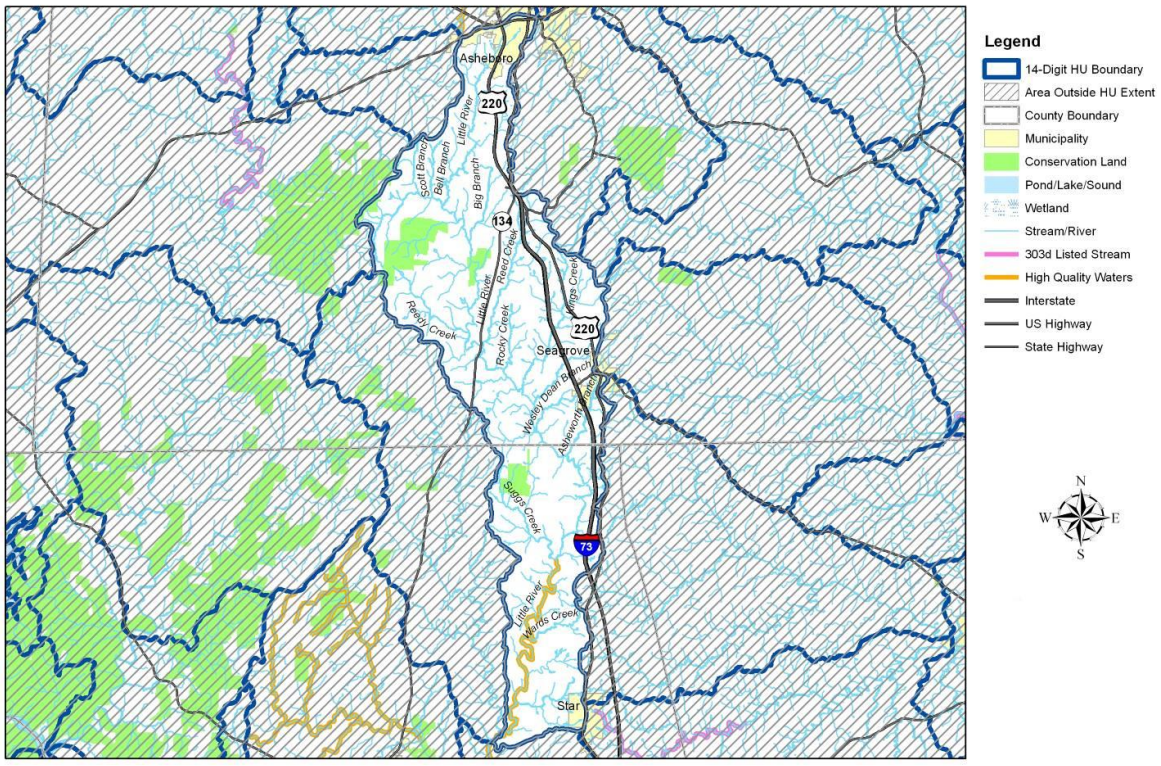
This is an existing TLW and contains a portion of the Town of Mount Gilead. This watershed has several animal operations and is expected to experience growth of approximately 220 according to 2015 Population Projections. This watershed has land already under conservation, including gamelands and land under Wildlife Resources Commission protection, and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences and a substantial amount of forest and wetlands. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Clarks Creek Watershed

Little River: 03040104030010

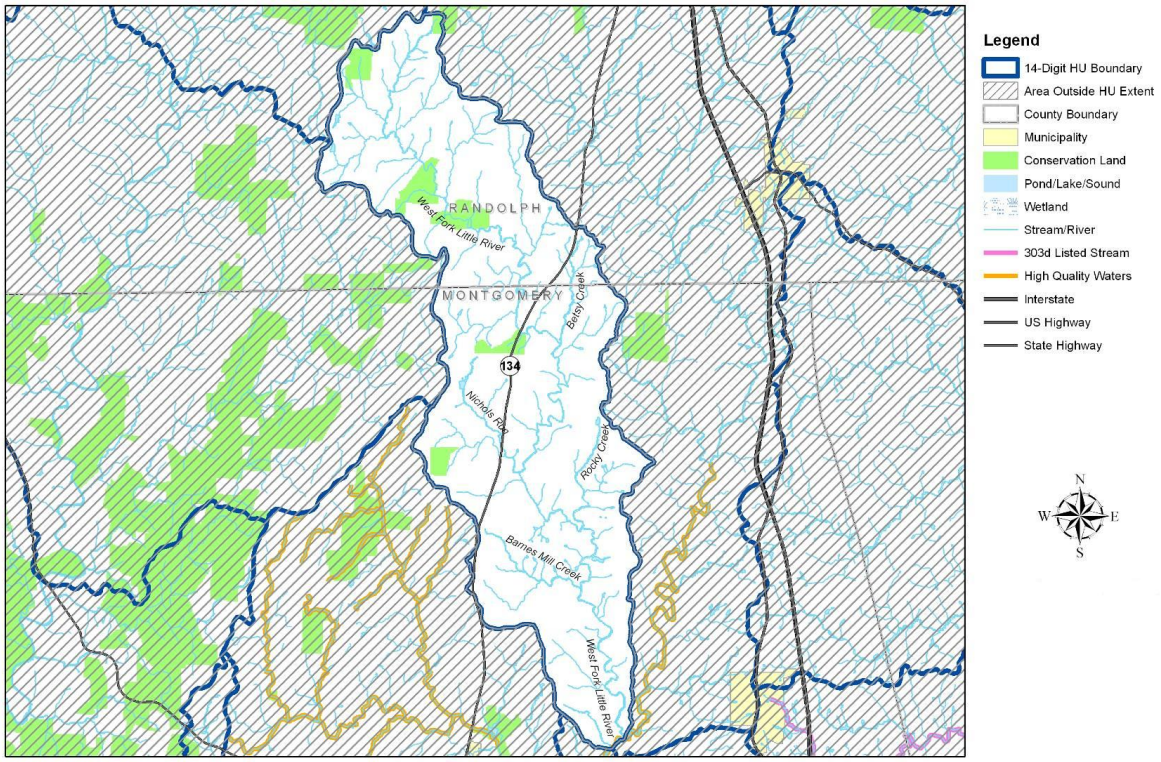
This is a newly designated TLW and has almost 60 animal operations. This watershed is adjacent to the City of Asheboro and is expected to increase in population by approximately 1,300 by the year 2015; it also contains portions of the Towns of Seagrove and Star. The watershed contains a Wildlife Resource Commission priority area, has land already under conservation, including land under protection of Wildlife Resources Commission and The Nature Conservancy, and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences and approximately 17 miles of Outstanding Resource Waters. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Little River Watershed

West Fork Little River: 03040104030020

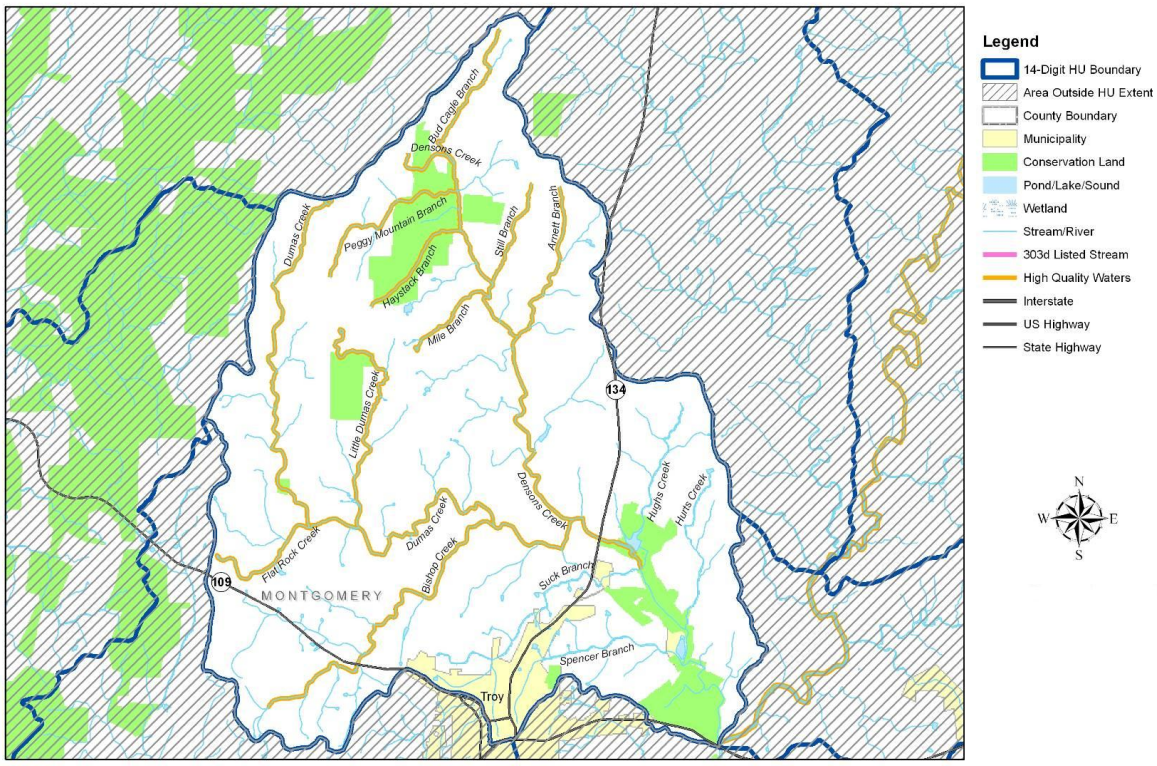
This is a newly designated TLW and has almost 40 animal operations. The watershed contains a Wildlife Resource Commission priority area, has land already under conservation, including land under protection of Wildlife Resources Commission and the Pisgah Covered Bridge and Natural Area protected by the Land Trust for Central North Carolina, and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences and approximately 6 miles of Outstanding Resource Waters, as well as a substantial amount of forest and wetlands. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




West Fork Little River Watershed

Densons Creek: 03040104030030

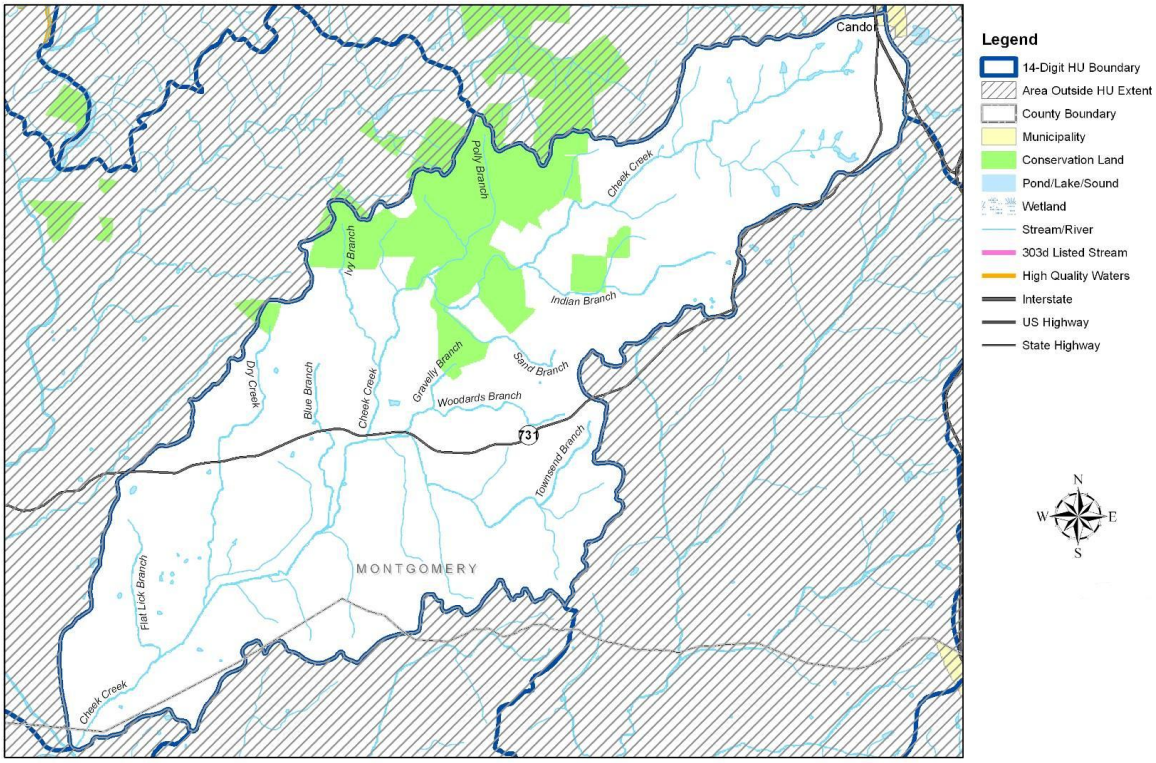
This is a newly designated TLW and contains a portion of the Town of Troy; by the year 2015 this watershed is expected to increase by over 300 in population. A Wildlife Resources Commission priority area, conserved land, including land under the protection of Wildlife Resources Commission such as the Agri Densons Creek Slope Plan Conservation Site, and also land designated as Significant Natural Heritage Area are located within this watershed. There are a substantial number of Natural Heritage Element Occurrences and approximately 80 miles of Outstanding Resource Waters, as well as a substantial amount of forest and wetlands. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Densons Creek Watershed

Cheek Creek: 03040104050010

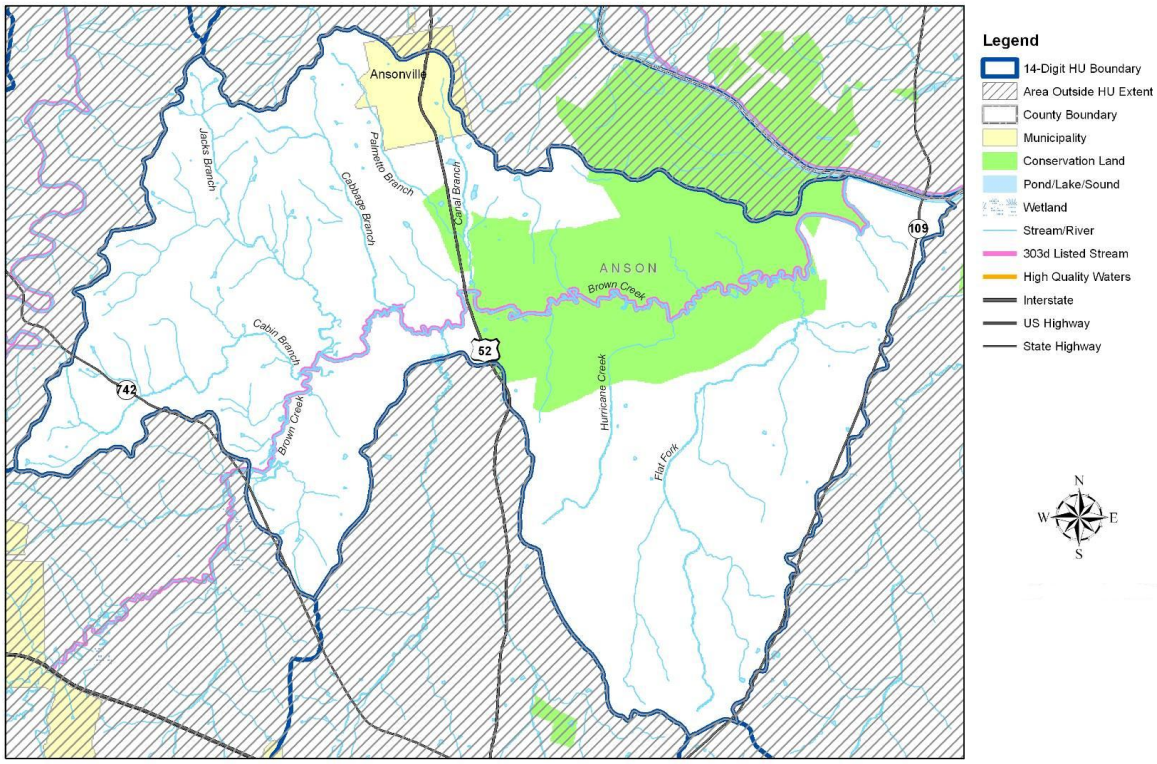
This is an existing TLW and contains a few animal operations and has land already under conservation, including land under protection by Wildlife Resources Commission, and also land designated as Significant Natural Heritage Area. There is a substantial number of Natural Heritage Element Occurrences as well as a substantial amount of forest and wetlands. Opportunities within this watershed would likely include preservation and would compliment land already under protection to maintain water quality standards.




Cheek Creek Watershed

Brown Creek: 03040104061030

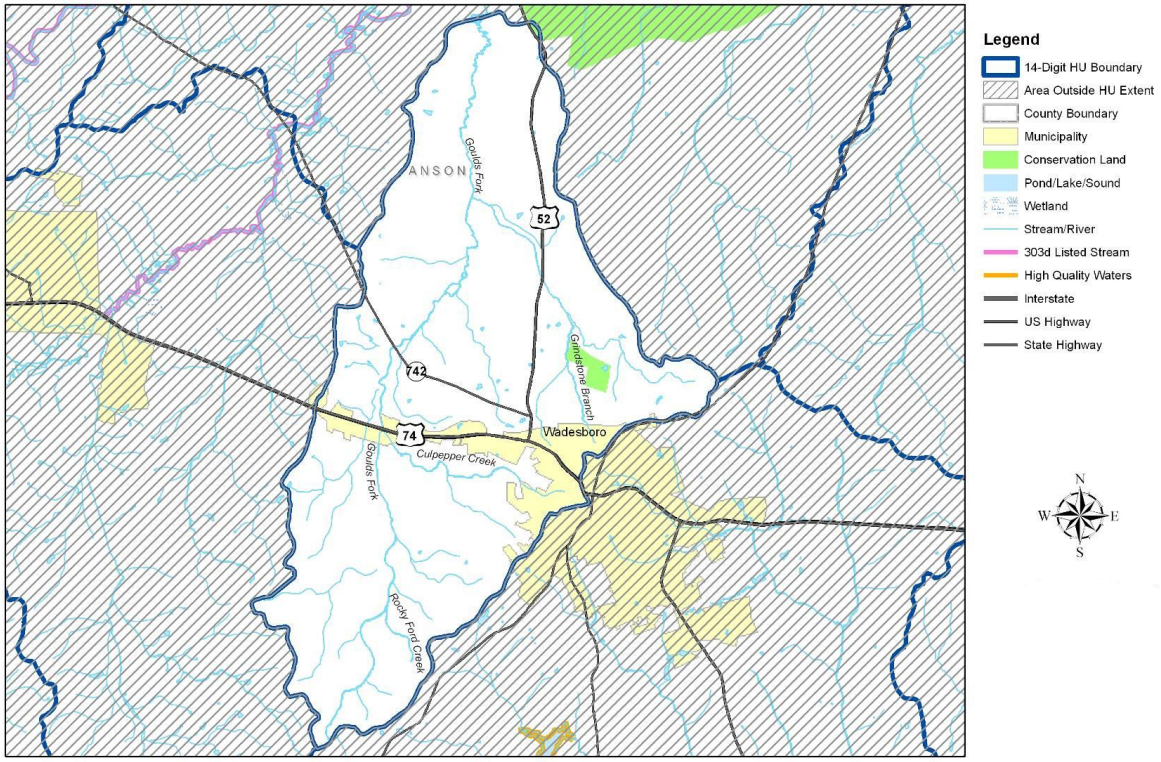
This is a newly designated TLW with approximately 28% of its stream length identified as impaired for Aquatic Life and Overall according to 2006 DWQ 303(d) data. Increased impervious surface, some agricultural practices, permitted dischargers and hydromodification from an impoundment could be contributing to low dissolved oxygen violations and impaired biological integrity in this watershed. Portions of the Town of Ansonville are within this watershed and there are almost 20 animal operations contained here as well. In addition, the watershed includes Wildlife Resource Commission priority area, has land already under conservation, including portions of the Pee Dee National Wildlife Refuge managed by U.S. Fish and Wildlife Service, and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences as well as a large amount of forest and wetlands. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Brown Creek Watershed

Goulds Creek: 03040104061040

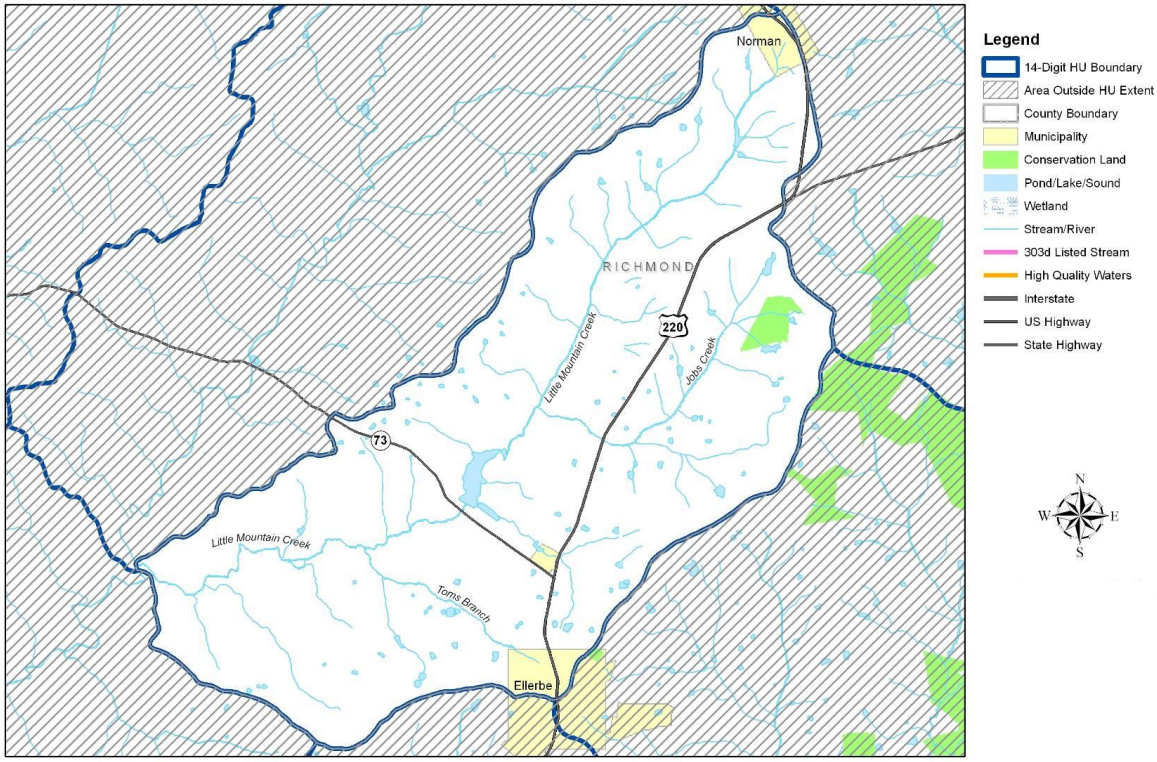
This is an existing TLW and contains a portion of the Town of Wadesboro. A Wildlife Resource Commission priority area, land already under conservation, including Little Park managed by Anson County, and also land designated as Significant Natural Heritage Area are located here. There is also a large amount of forest and wetlands and existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Goulds Creek Watershed

Little Mountain Creek: 03040104080020

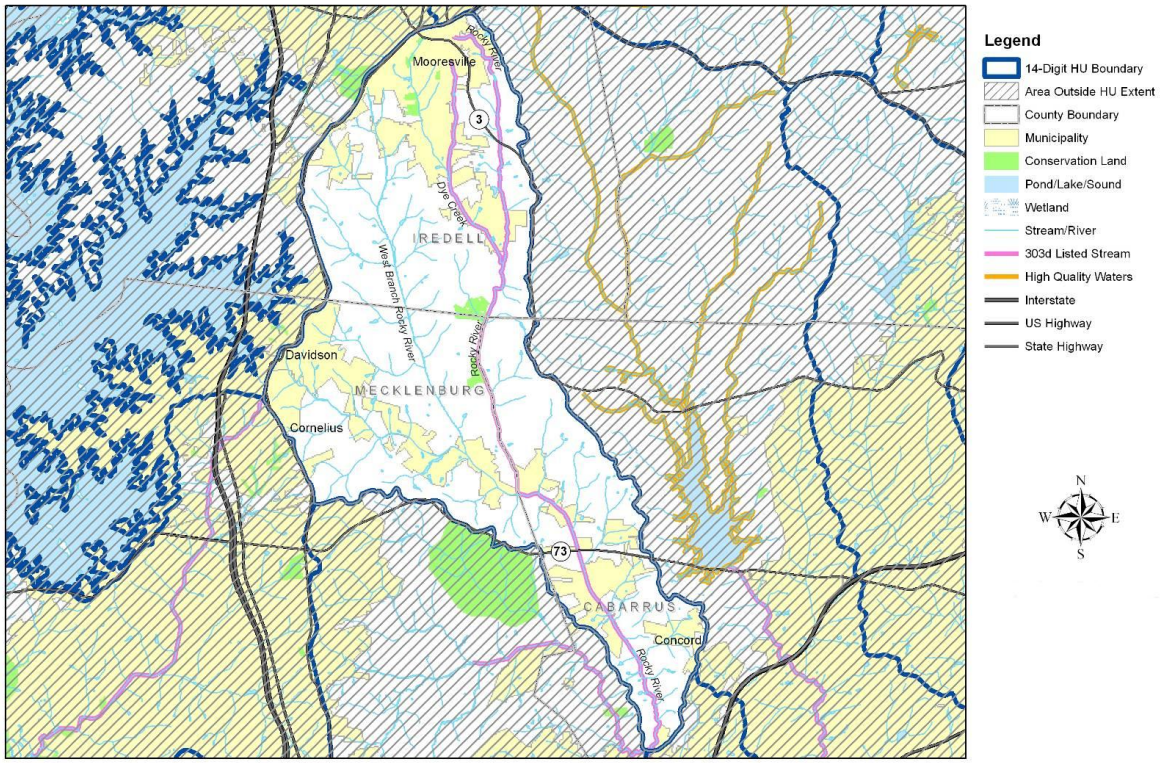
This is an existing TLW with over 30 animal operations and minimal projected population growth. This watershed includes portions of the Towns of Ellerbe and Norman and has a significant amount of forested wetland and approximately 16 miles of Water Supply Waters. The Wildlife Resources Commission Sandhills Gameland is within this watershed. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Little Mountain Creek Watershed

West Branch Rocky River: 03040105010010

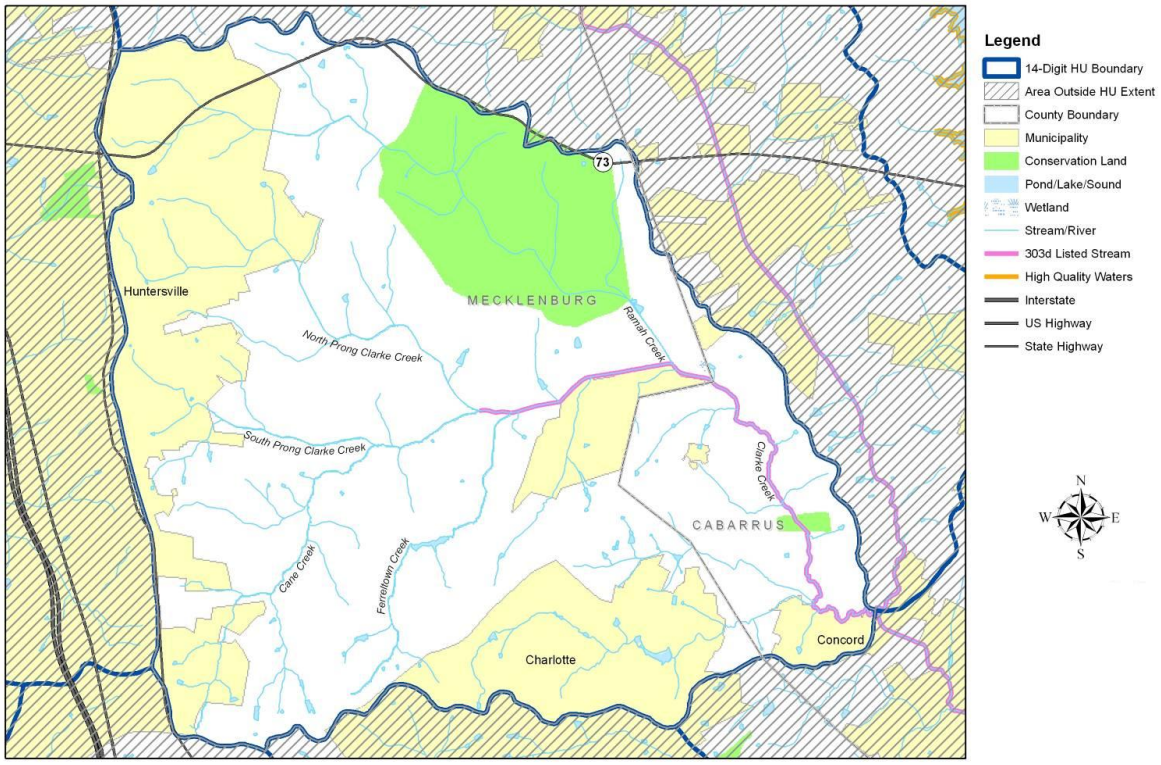
This is an existing TLW and continues to have increasing development pressures. This watershed contains portions of many urban communities including the Cities of Mooresville, Davidson, Cornelius, Kannapolis and Concord. The projected population is expected to increase by approximately 9,200 by the year 2015. This watershed has had almost 15% of its stream length identified as impaired for Aquatic Life and Overall according to 2006 DWQ 303(d) data. Increasing imperviousness, stormwater runoff and permitted dischargers are likely contributors to turbidity and fecal coliform violations and impaired biological integrity within this watershed. This watershed also has several animal operations. There is some land under conservation within this watershed, including land under protection by Land Trust for Central North Carolina and several parks managed by the City of Mooresville, as well as areas of forested wetland. This watershed is part of the Upper Rocky River Local Watershed Plan and existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




West Branch Rocky River Watershed

Clarke Creek: 03040105010020

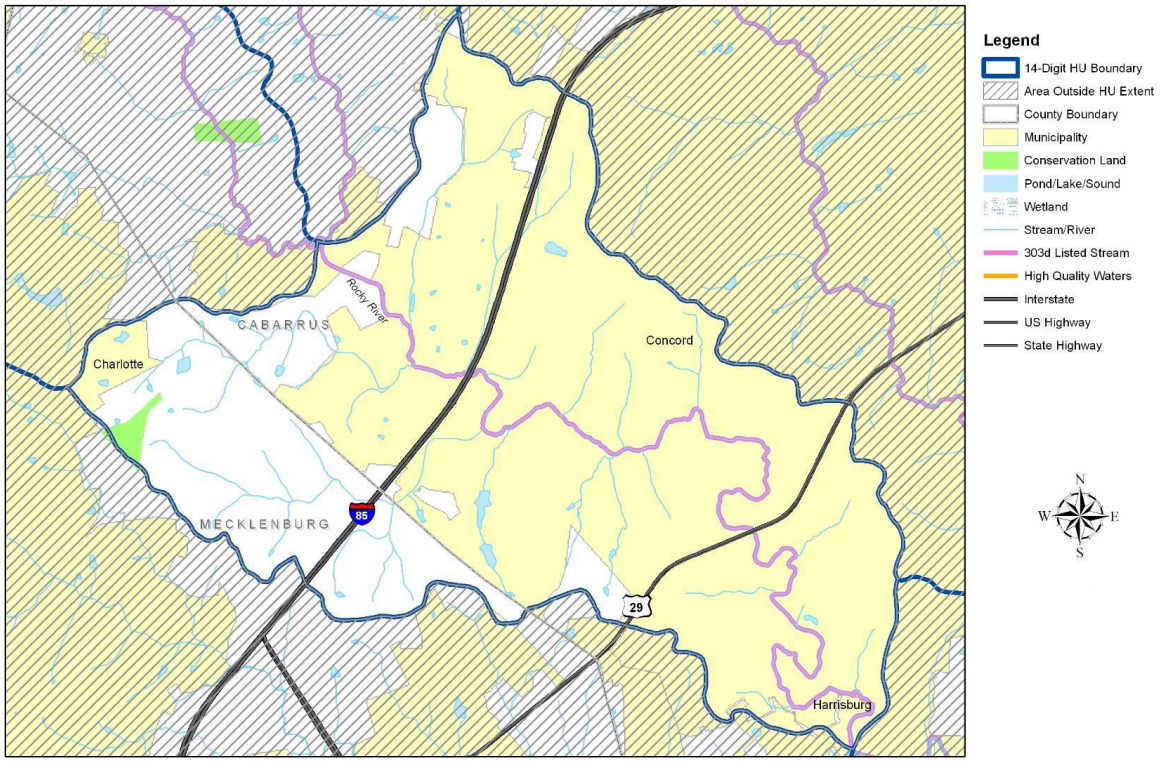
This is an existing TLW with approximately 6% of its stream length identified as impaired Overall according to 2006 DWQ 303(d) data. Some agricultural practices and development impacts are likely contributors to impaired biological integrity within this watershed. There are several animal operations within this watershed. This watershed contains portions of several urban communities including the Cities of Huntersville, Concord and Charlotte. Population is projected to increase by approximately 5,500 residents by the year 2015. In addition, the watershed includes a Wildlife Resource Commission priority area, has land already under conservation, including land under protection by Wildlife Resources Commission and the Land Trust for Central North Carolina Clarke Creek Wetlands and Rookery, and also land designated as Significant Natural Heritage Area. There are Natural Heritage Element Occurrences as well as forest and wetlands. This watershed is part of the Upper Rocky River Local Watershed Plan and existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Clarke Creek Watershed

Upper Rocky River: 03040105010030

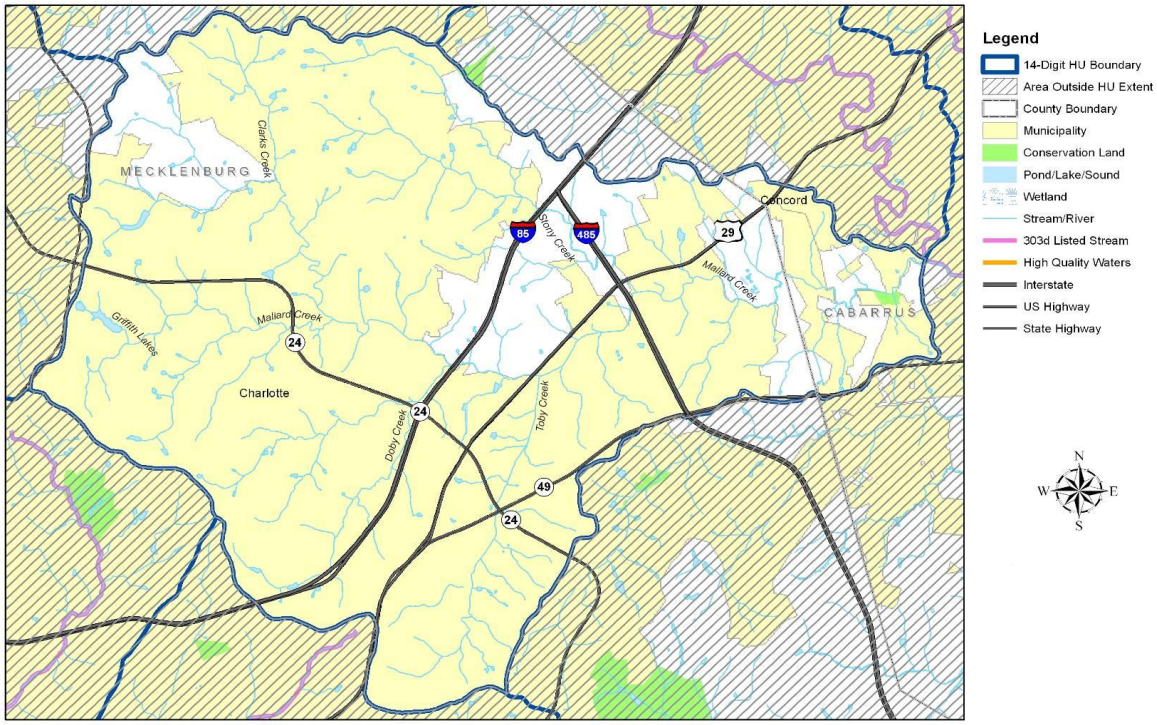
This is an existing TLW with approximately 23% of its stream length identified as impaired for Aquatic Life according to 2006 DWQ 303(d) data. Construction impacts, stormwater runoff and some permitted dischargers are likely contributors to turbidity violations and impaired biological integrity within this watershed. Approximately 16% of the watershed is impervious. This watershed contains portions of the City of Concord and the population of this watershed is projected to increase by approximately 2,000 residents by the year 2015. In addition, this watershed has land designated as Significant Natural Heritage Area and there are Natural Heritage Element Occurrences as well as forest and wetlands. This watershed is part of the Upper Rocky River Local Watershed Plan which was developed in 2004.




Upper Rocky River Watershed

Mallard Creek: 03040105010040

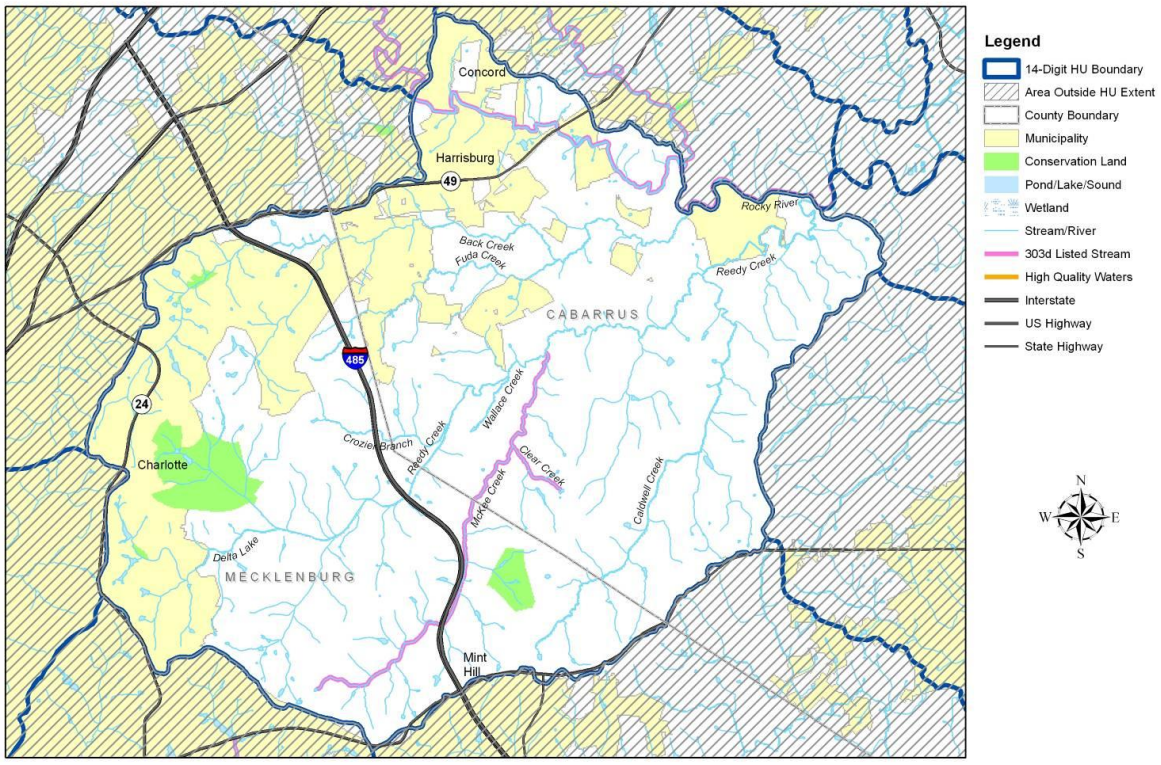
This is an existing TLW with approximately 16% imperviousness. This watershed contains portions of the Cities of Charlotte, Concord and Harrisburg. The watershed has some land designated as Significant Natural Heritage Area and there are several Natural Heritage Element Occurrences as well as some forest and wetlands. This watershed is part of the Upper Rocky River Local Watershed Plan which was developed in 2004 and existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Mallard Creek Watershed

Reedy Creek: 03040105010050

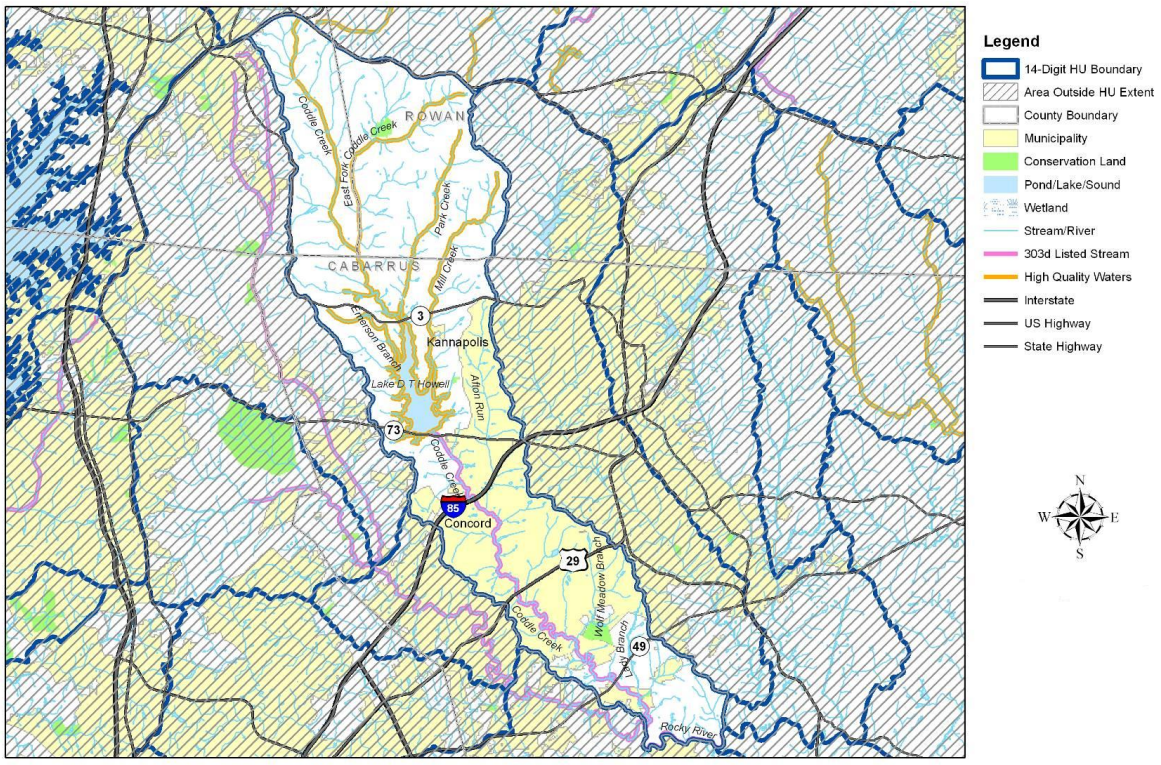
This is an existing TLW with approximately 10% of its stream length identified as impaired for Aquatic Life and Overall according to 2006 DWQ 303(d) data. Construction impacts, stormwater runoff, permitted impacts and some agricultural practices are likely contributors to fecal coliform and turbidity violations, sedimentation and impaired biological integrity within this watershed. This watershed contains portions of several urban communities including the Cities of Charlotte, Concord and Harrisburg, approximately 6% of the watershed is impervious. There are several animal operations within this watershed. In addition, this watershed includes a Wildlife Resource Commission priority area, has some land already under conservation, including parks managed by the City of Charlotte and open space managed by Mecklenburg County, and also land designated as Significant Natural Heritage Area. There is a substantial number of Natural Heritage Element Occurrences as well as some forest and wetlands. This watershed is part of the Upper Rocky River Local Watershed Plan and existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Reedy Creek Watershed

Coddle Creek: 03040105020010

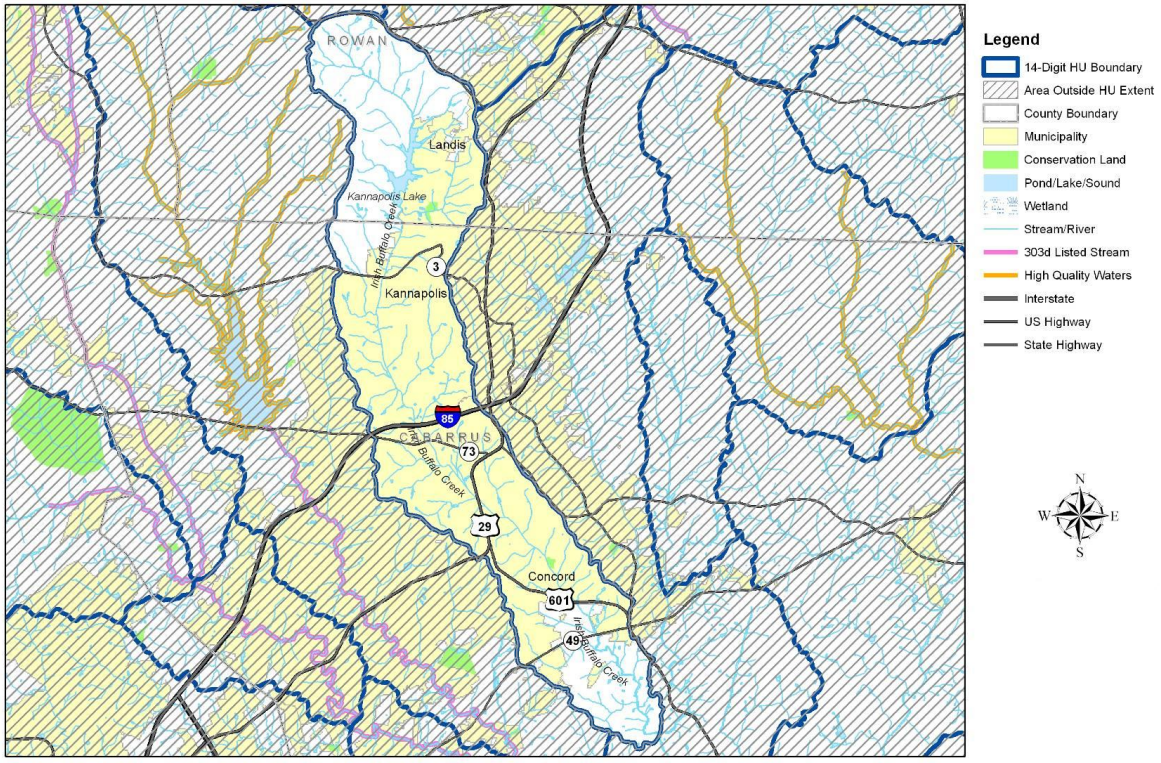
This is an existing TLW with approximately 10% of its stream length identified as impaired for Aquatic Life according to 2006 DWQ 303(d) data. Stormwater runoff and permitted dischargers are likely contributors to turbidity violations and impaired biological integrity within this watershed. This watershed contains portions of several urban communities including the Cities of Kannapolis, Concord and Harrisburg, approximately 4% of the watershed is impervious. There are over 30 animal operations within this watershed. In addition, the watershed includes a Wildlife Resource Commission priority area, has some land already under conservation, including land under Land Trust for Central North Carolina protection and the Frank Liske Park managed by Cabarrus County, and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences as well as some forest and wetlands. There are also over 50 miles of Water Supply Waters in this watershed which service the City of Concord. This watershed is part of the Upper Rocky River Local Watershed Plan and existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Coddle Creek Watershed

Irish Buffalo Creek: 03040105020040

This is an existing TLW with 12% imperviousness; portions of the Cities of Kannapolis, Concord and Landis are within this watershed. There are several animal operations within this watershed. There are approximately 20 miles of Water Supply Waters in this watershed which service the City of Kannapolis. Bakers Creek Park and Greenway Park which are managed by the City of Kannapolis and Caldwell Park which is managed by the City of Concord are within this watershed. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Irish Buffalo Creek Watershed

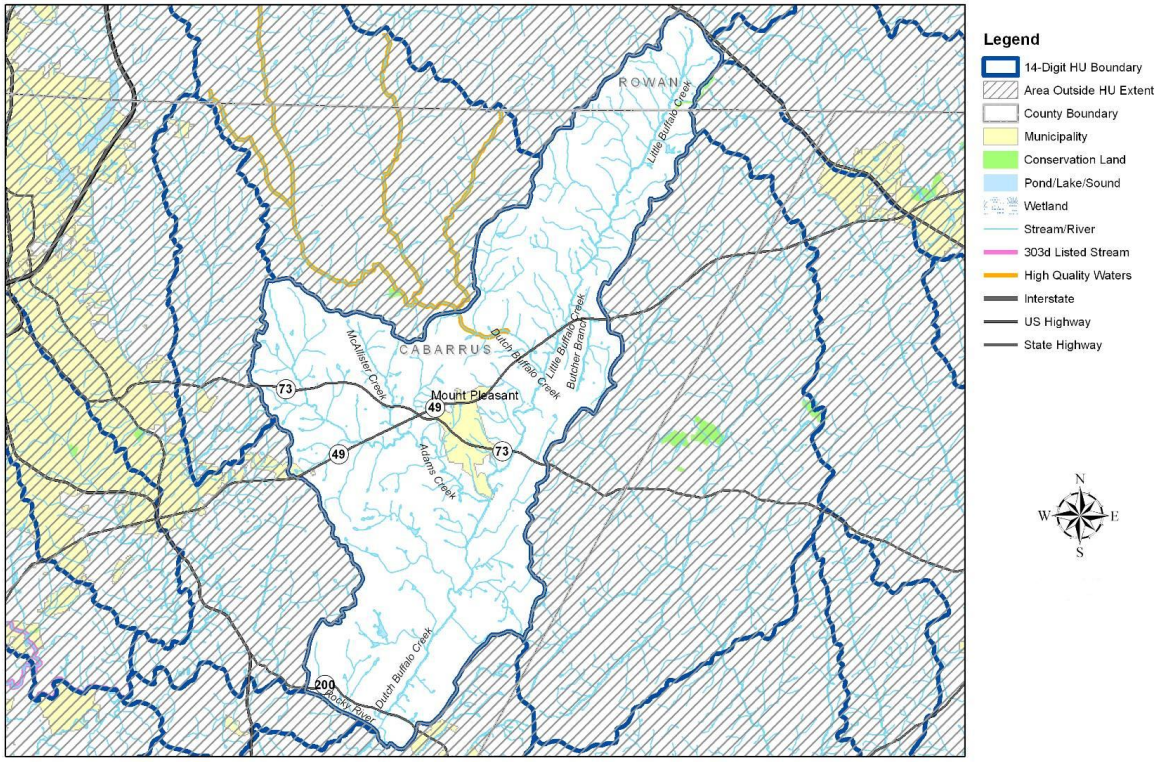
Upper Dutch Buffalo Creek: 03040105020050

This is a newly designated TLW with a projected population increase of approximately 1,400 by the year 2015. There are several animal operations within this watershed. In addition, the watershed includes Wildlife Resource Commission priority area and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences as well as some forest and wetlands. There are also 100 miles of Water Supply Waters in this watershed. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.


Upper Dutch Buffalo Creek Watershed

Lower Dutch Buffalo Creek: 03040105020060

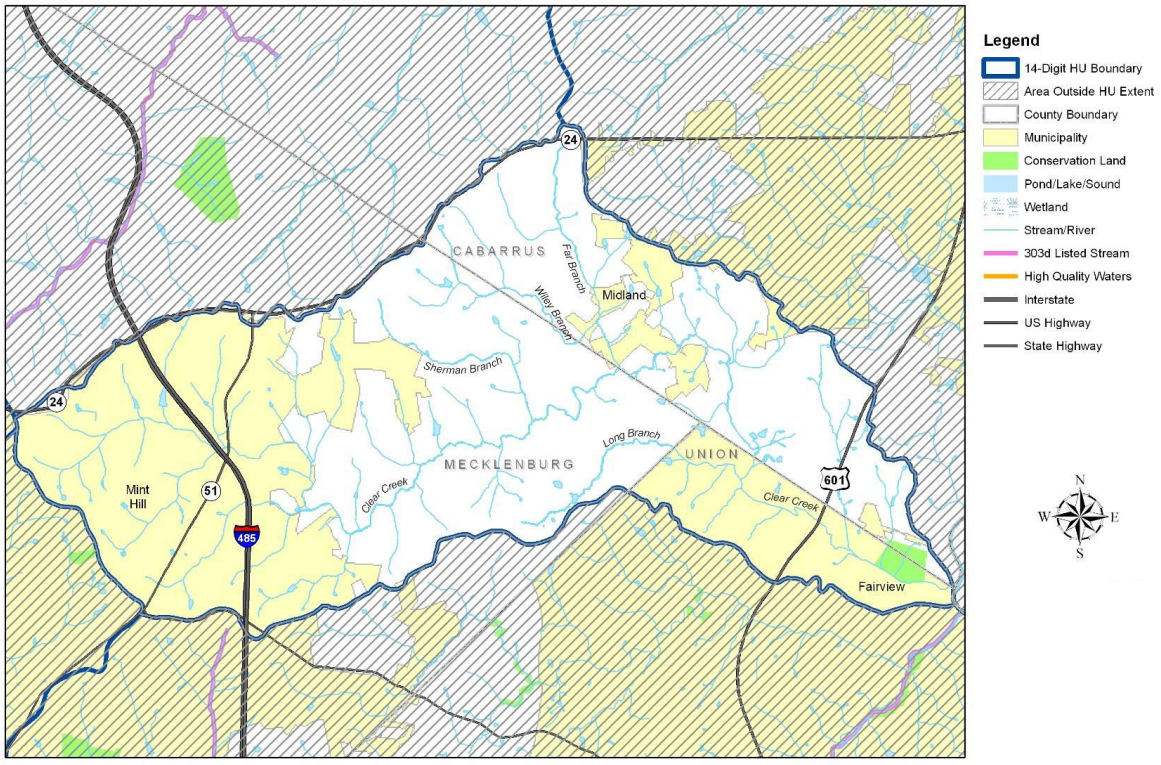
This is an existing TLW with a projected population increase of approximately 4,000 by the year 2015. The Town of Mount Pleasant is within this watershed. There are several animal operations within this watershed. In addition, the watershed includes a Wildlife Resource Commission priority area and has some land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences as well as some forest and wetlands. There are also approximately 7 miles of Water Supply Waters in this watershed.




Lower Dutch Buffalo Creek Watershed

Clear Creek: 03040105030010

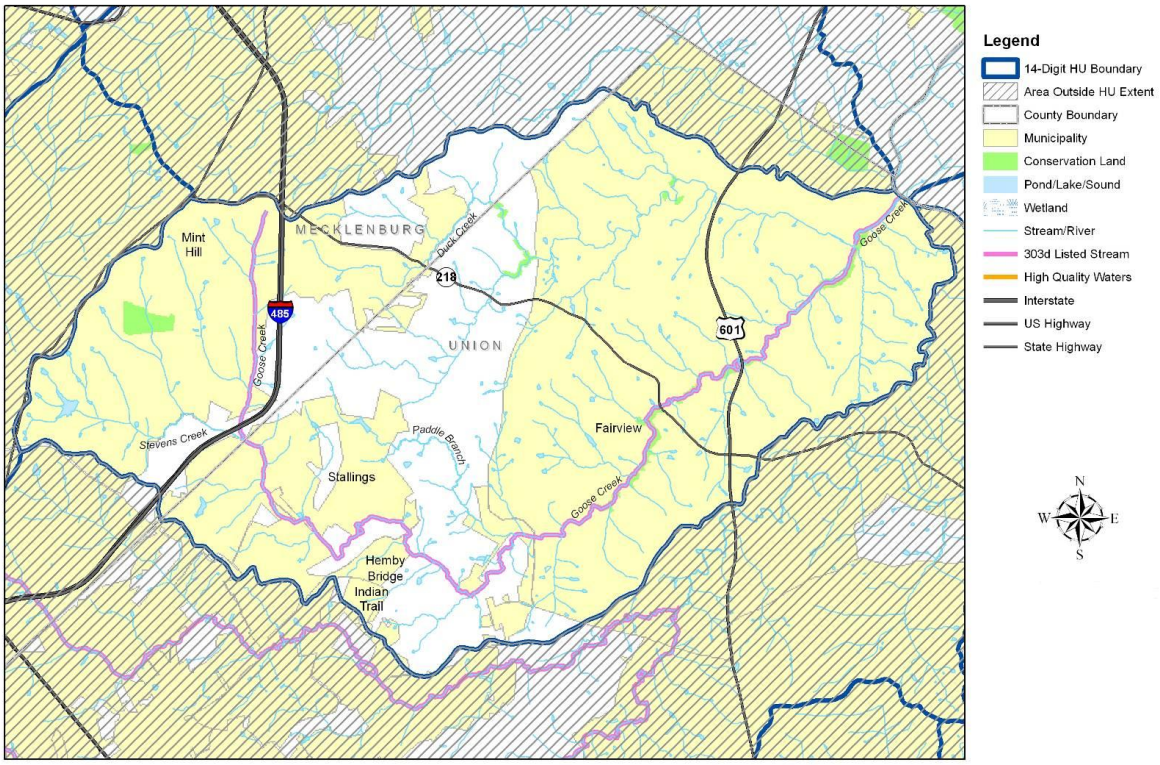
This is a newly designated TLW with a projected population increase of approximately 3,700 by the year 2015. Portions of the Towns of Mint Hill, Fairview and Midland are located within this watershed. There are several animal operations within this watershed. In addition, the watershed has some land already under conservation, including land under Land Trust for Central North Carolina protection, and also has some forest and wetlands.




Clear Creek Watershed

Goose/Duck Creek: 03040105030020

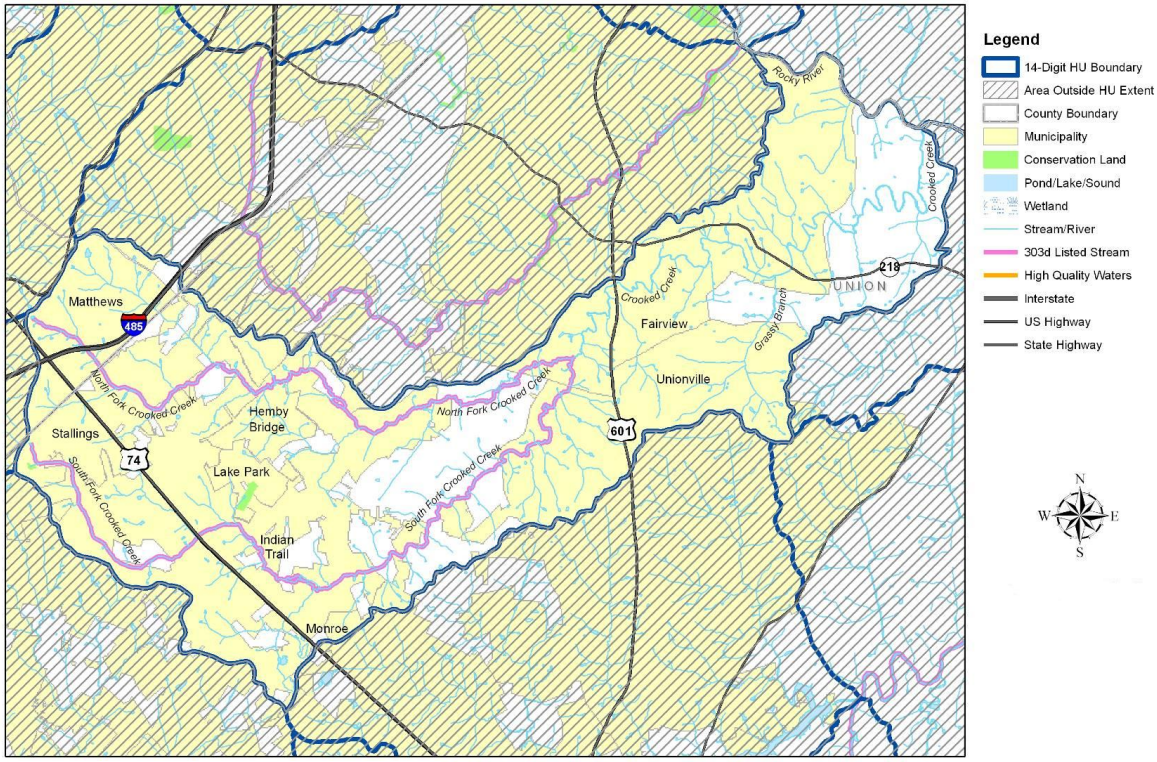
This is an existing TLW with approximately 11% of its stream length identified as impaired Overall according to 2006 DWQ 303(d) data; construction impacts and increasing imperviousness are likely contributors to fecal coliform violations within the watershed. Approximately 2% of the watershed is impervious; several communities are located within this watershed including the Towns of Mint Hill, Fairview, Stallings, Hemby Bridge and Indian Trail. Over a dozen animal operations are located within this watershed. The population is projected to increase by almost 9,000 residents by the year 2015 in this watershed. In addition, the watershed includes Wildlife Resource Commission priority area, has some land already under conservation, including land under Wildlife Resources Commission protection, and also land designated as Significant Natural Heritage Area. There are 70 Natural Heritage Element Occurrences as well as some forest and wetlands. This watershed is home to a population of the Carolina heelsplitter which is a federally endangered mussel species that is found in only two other watersheds in the state. This watershed is part of the Goose and Crooked Creel Local Watershed Plan which is currently under development.




Goose Creek Watershed

Crooked Creek: 03040105040010

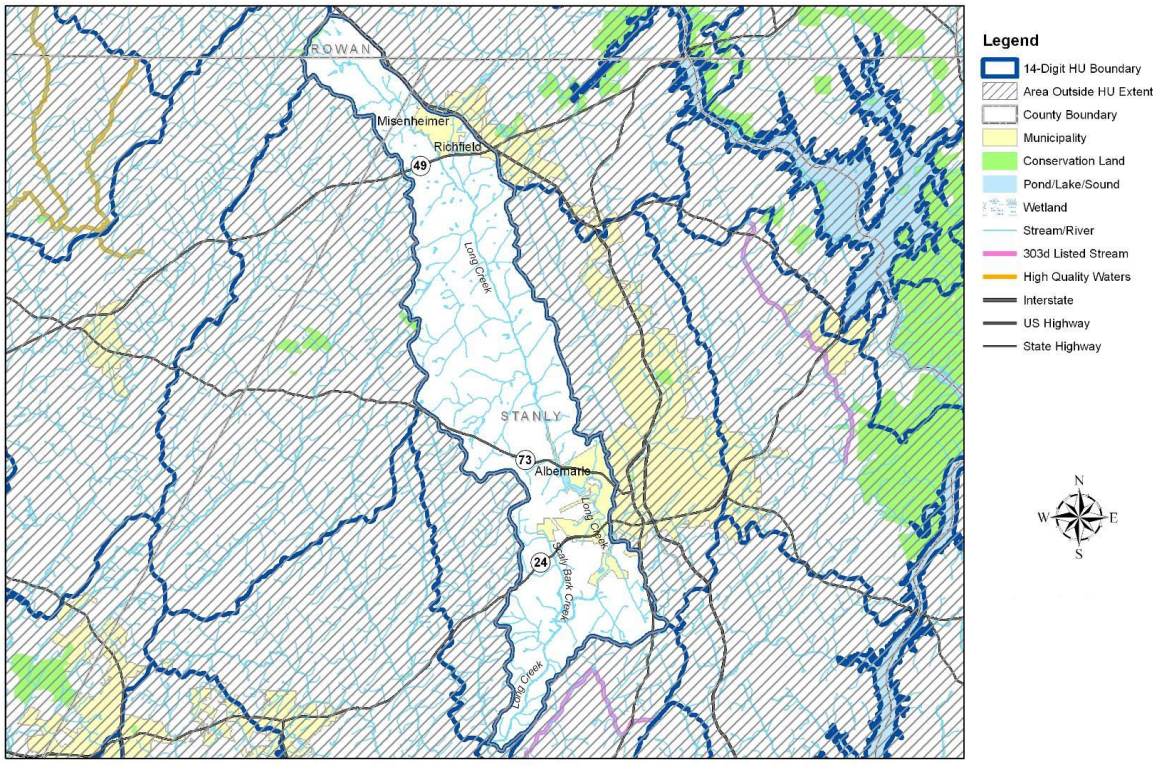
This is an existing TLW with approximately 12% of its stream length identified as impaired for Aquatic Life and Overall according to 2006 DWQ 303(d) data. Construction impacts, stormwater runoff and some agricultural practices are likely contributors to turbidity violations and impaired biological integrity within this watershed. Several communities are located within this watershed including the Towns of Matthews, Mint Hill, Fairview, Stallings, Hemby Bridge, Lake Park, Monroe, Unionville, and Indian Trail, approximately 5% of the watershed is impervious. There are almost 60 animal operations within this watershed. In addition, the watershed includes Wildlife Resource Commission priority area, has some land already under conservation, including open space managed by Union County, and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences as well as some forest and wetlands. This watershed is part of the Goose and Crooked Creel Local Watershed Plan which is currently under development.




Crooked Creek Watershed

Upper Long Creek: 03040105060030

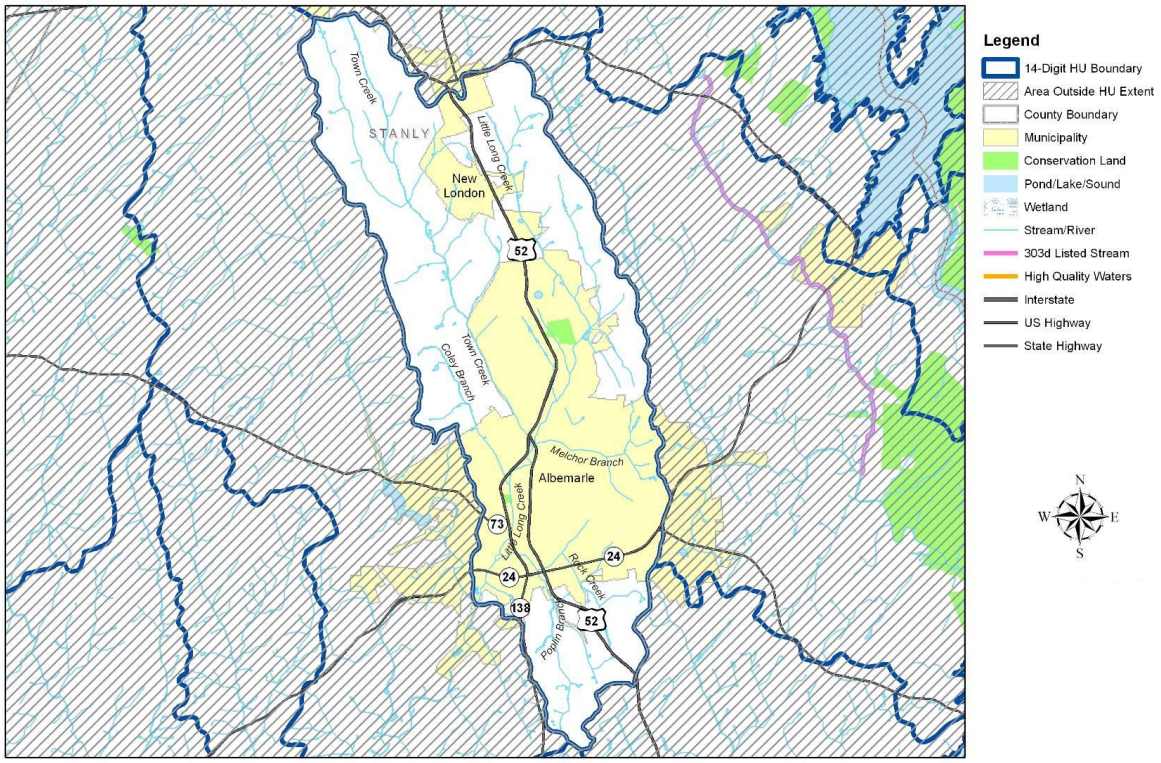
This is an existing TLW with over 30 animal operations and approximately 40% of the land is in agriculture use. This watershed contains portion of the Village of Misenheimer, Town of Richfield, and the City of Albemarle. In addition, the watershed includes a Wildlife Resource Commission priority area and also land designated as Significant Natural Heritage Area. There are several Natural Heritage Element Occurrences as well as some forest and wetlands.




Upper Long Creek

Little Long Creek: 03040105060040

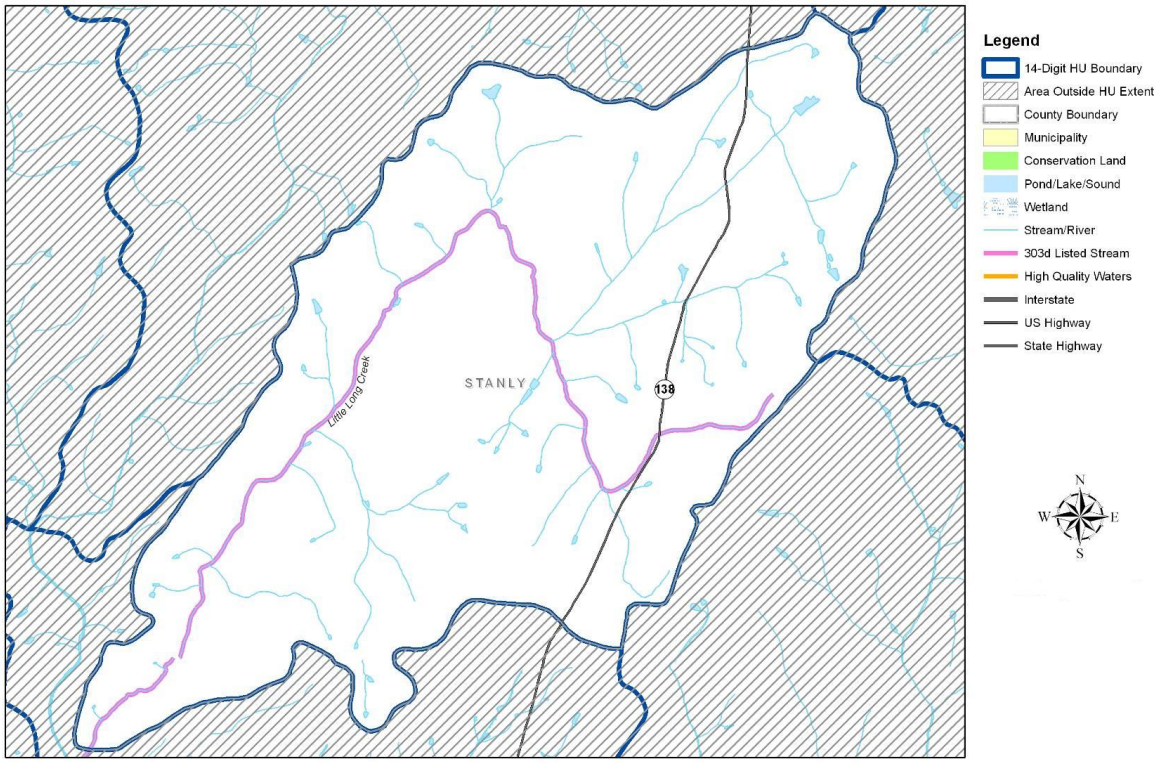
This is an existing TLW with approximately 25% of the land in agriculture use and approximately 7% of this watershed is impervious. This watershed contains portions of the Town of New London and the City of Albemarle; the projected population increase is almost 1,000 residents by 2015. There is some land already under conservation, including Morehead Memorial Park and Montgomery Memorial Park which are managed by the City of Albemarle, and also some land designated as Significant Natural Heritage Area, as well as some forest and wetlands within this watershed.




Little Long Creek Watershed

Lower Little Long Creek: 03040105060060

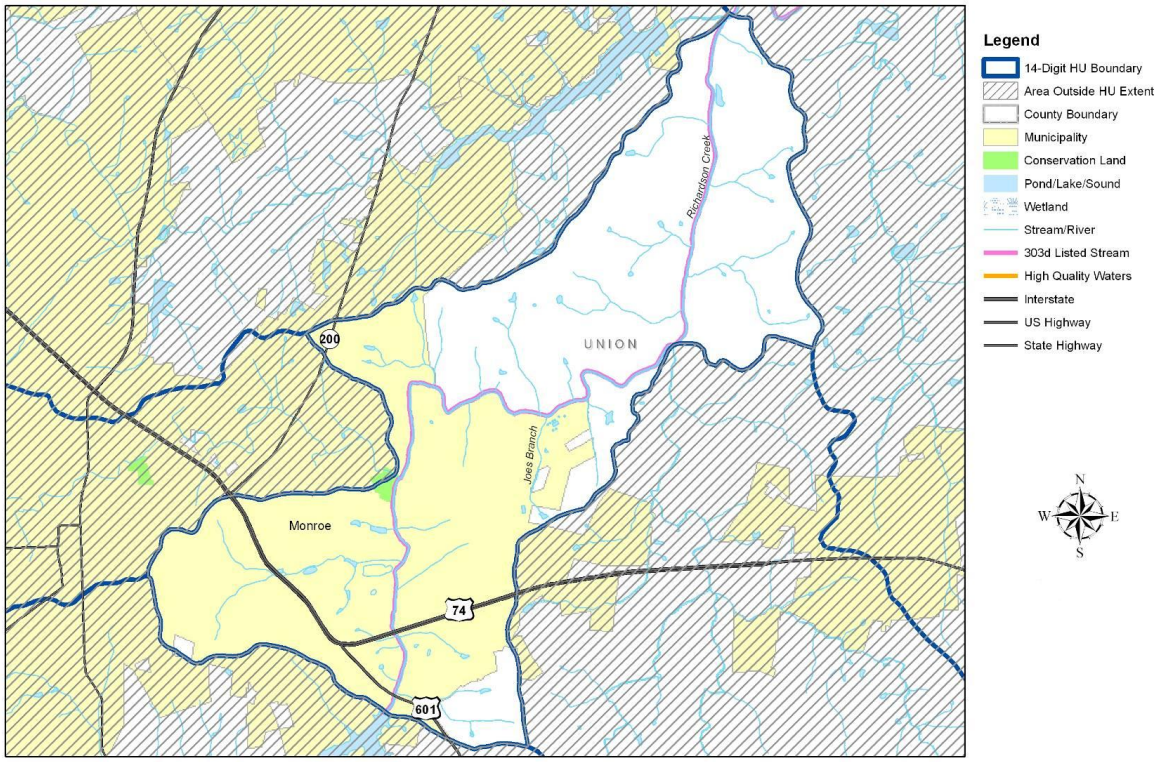
This is a newly designated TLW with approximately 44% of the land use in agriculture and approximately 20% of the stream length within it identified as impaired Overall according to the 2006 DWQ 303(d) data, though it is listed as a historical impact with the specific impairment as unknown. Stormwater runoff and some agricultural practices are likely contributors to degradation within this watershed. There are several animal operations within this watershed.




Lower Little Long Creek Watershed

Middle Richardson Creek: 03040105070020

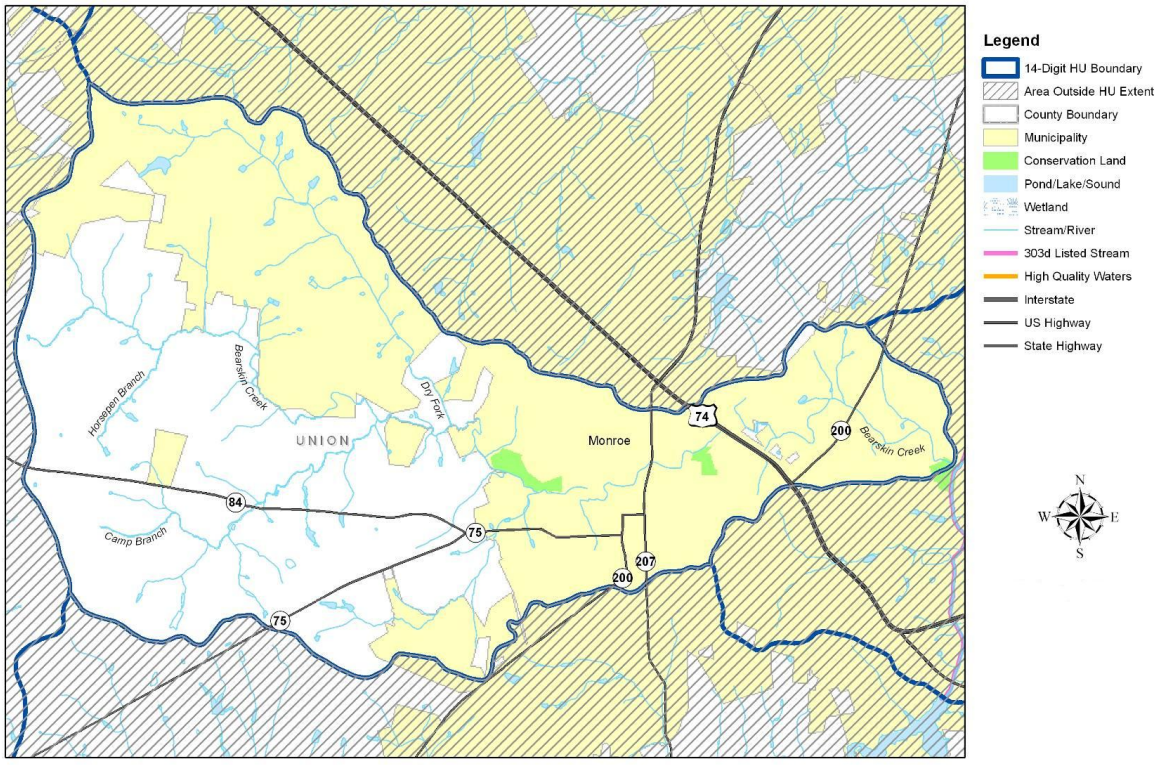
This is a newly designated TLW including portions of the City of Monroe, with approximately 38% of its stream length identified as impaired for Aquatic Life according to the 2006 DWQ 303(d) data. It is possible that development impacts have contributed to impaired biological integrity within this watershed. Approximately 11% of this watershed is impervious. The projected population of this watershed in expected to increase by approximately 5,300 residents by the year 2015. In addition, the watershed includes a Wildlife Resource Commission priority area and has some land already under conservation, including Sutton Park which is managed by the City of Monroe. There are Natural Heritage Element Occurrences as well as some forest and wetlands.




Middle Richardson Creek Watershed

Bearskin Creek: 03040105070030

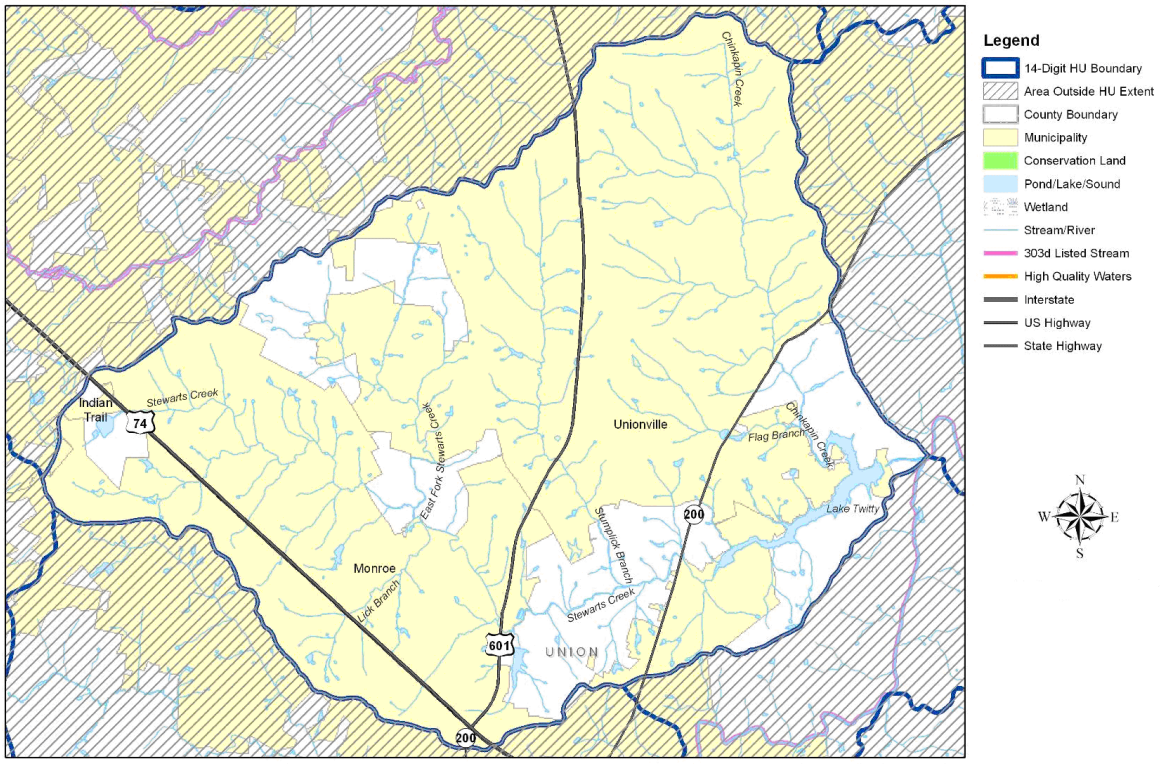
This is a newly designated TLW including portions of the City of Monroe, with a projected population increase of more than 10,500 by the year 2015. This watershed is approximately 11% impervious. In addition, the watershed includes Wildlife Resource Commission priority area, has some land already under conservation, including Dickerson Park and Creft Park which are both managed by the City of Monroe, and forest and wetlands.




Bearskin Creek Watershed

Stewarts Creek: 03040105070050

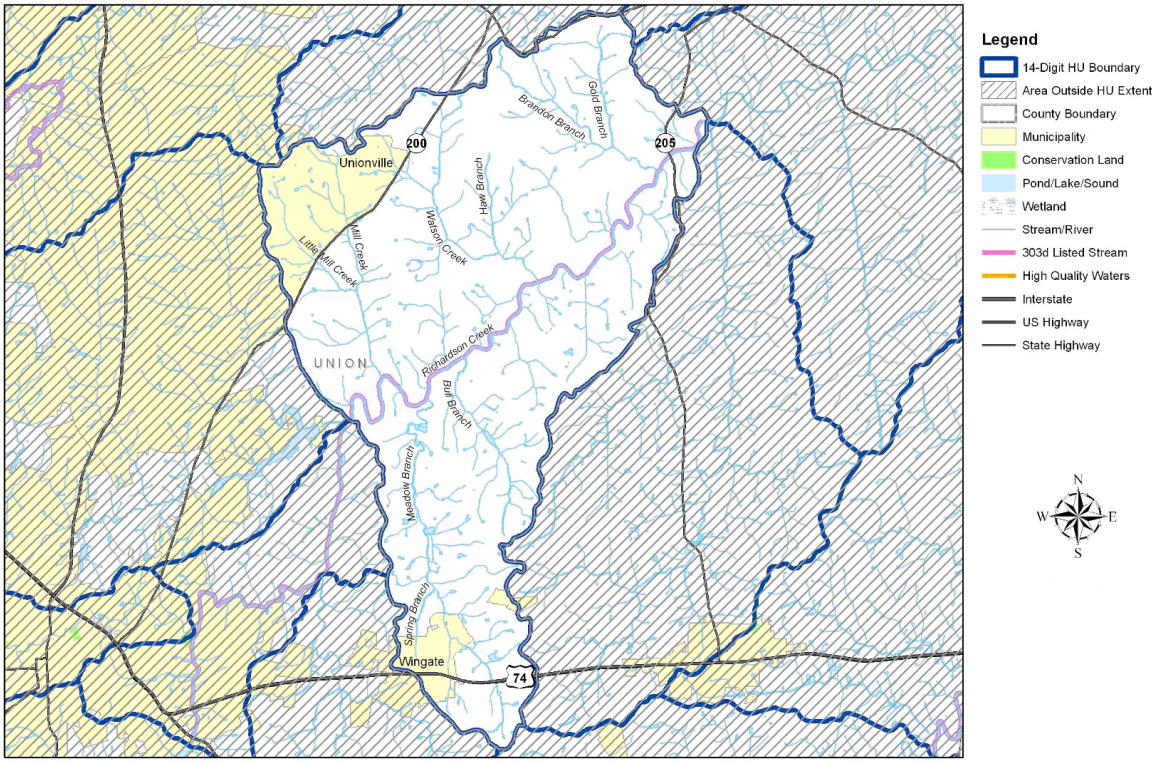
This is an existing TLW with over 30 animal operations and approximately 40% of land is in agriculture use. This watershed contains portions of the Cities of Monroe and Unionville, the population of this watershed is expected to increase by more than 10,200 by the year 2015. In addition, the watershed includes a Wildlife Resource Commission priority area and almost 100 miles of Water Supply Waters, including Lake Twitty which services the City of Monroe.




Stewarts Creek Watershed

Lower Richardson Creek: 03040105070060

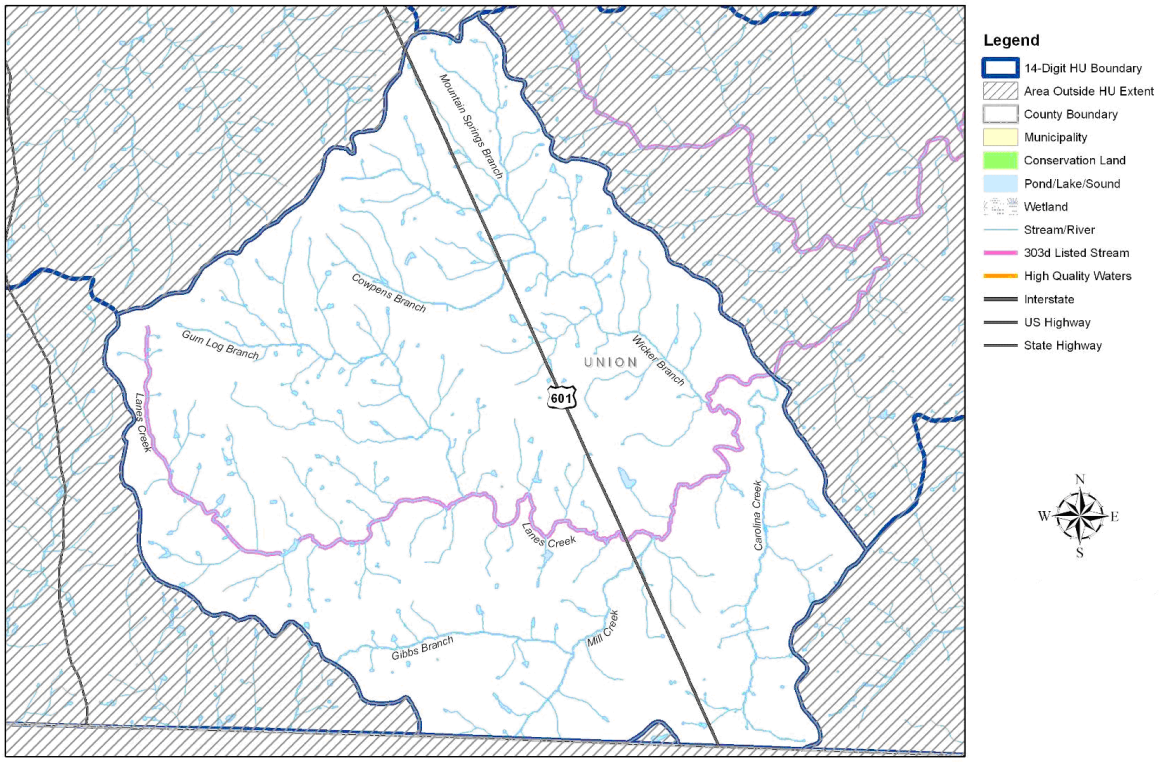
This is a newly designated TLW with over 30 animal operations and approximately 40% of land in agriculture use. Approximately 12% of the stream length within this watershed is identified as impaired for Aquatic Life according to the 2006 DWQ 303(d) data. It is possible development impacts have contributed to impaired biological integrity within this watershed. This watershed includes portions of the City of Unionville and the Town of Wingate, the population of this watershed is expected to increase by more than 6,000 by the year 2015. In addition, the watershed includes a Wildlife Resource Commission priority area and several Natural Heritage Element Occurrences.




Lower Richardson Creek Watershed

Upper Lanes Creek: 03040105081010

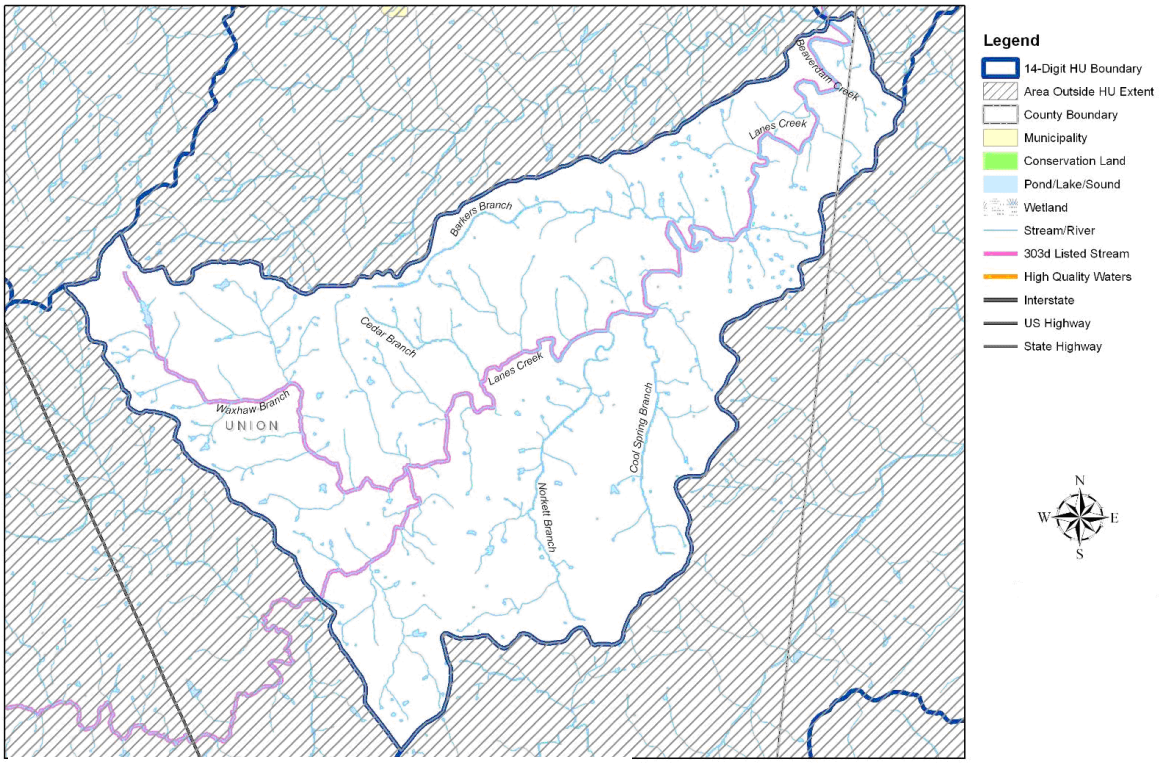
This is an existing TLW with over 30 animal operations and approximately 50% of land in agriculture use. Approximately 9% of the streams within this watershed are identified as impaired for Aquatic Life according to the 2006 DWQ 303(d) data. Some agricultural practices and development impacts are possible contributors to impaired biological integrity within this watershed. The population of this watershed is expected to increase by more than 2,000 by the year 2015. In addition, the watershed includes a Wildlife Resource Commission priority area. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Upper Lanes Creek Watershed

Middle Lanes Creek: 03040105081020

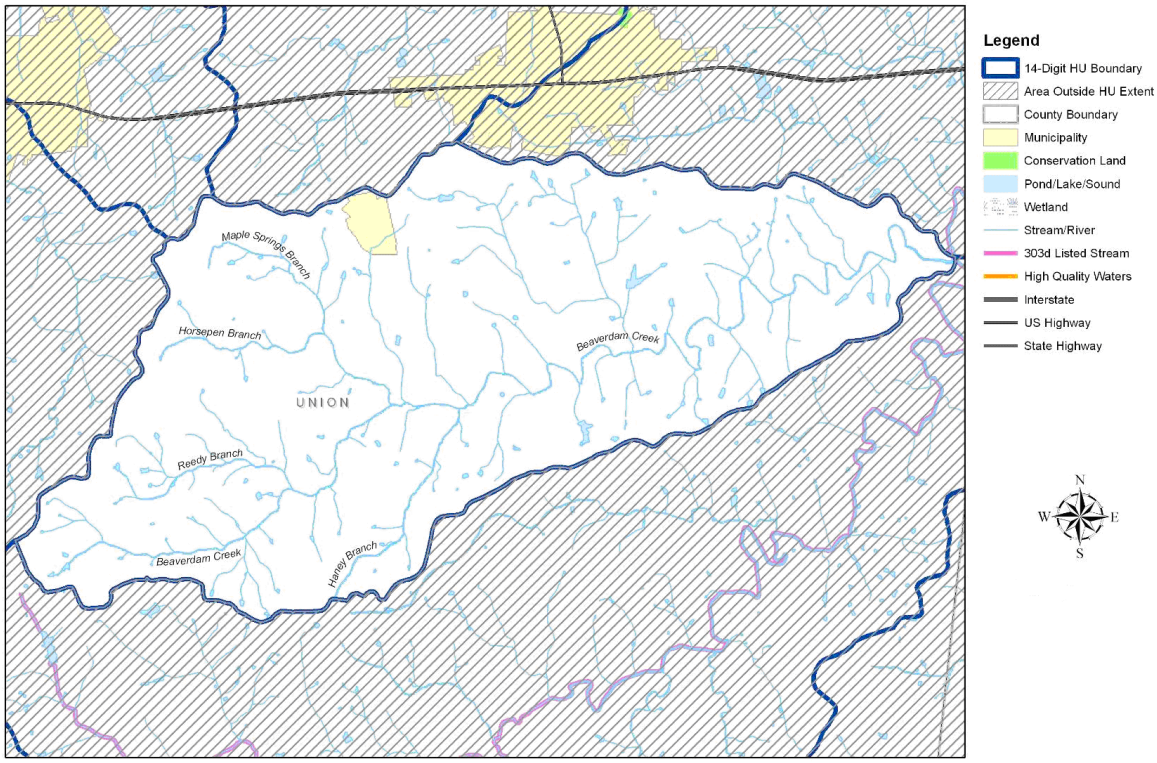
This is an existing TLW with 30 animal operations and approximately 40% of land in agriculture use. Approximately 24% of the stream length within this watershed is identified as impaired for Aquatic Life and Overall according to the 2006 DWQ 303(d) data. Some agricultural practices are likely contributors to impaired biological integrity within this watershed. The population of this watershed is expected to increase by more than 1,600 by the year 2015. In addition, the watershed includes a Wildlife Resource Commission priority area and several Natural Heritage Element Occurrences.




Middle Lanes Creek Watershed

Beaverdam Creek: 03040105081030

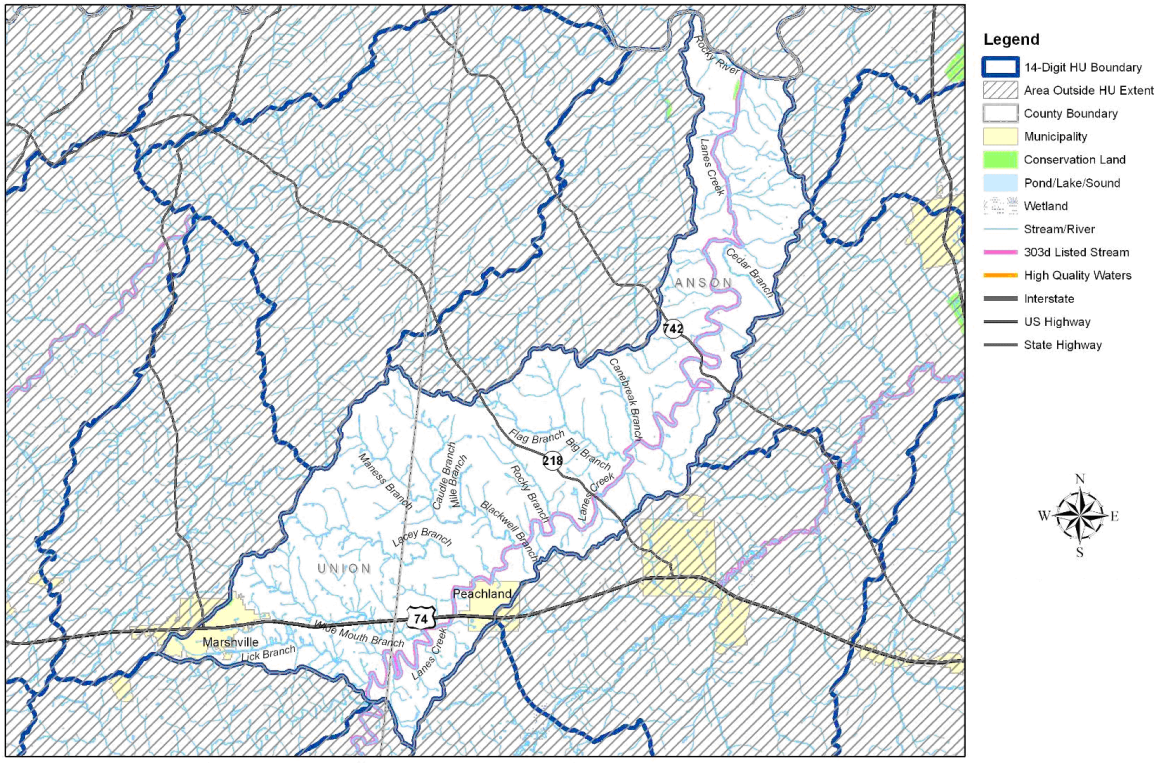
This is an existing TLW with over 20 animal operations and approximately 50% of land in agriculture use. This watershed contains portions of the Town of Marshville; the population of this watershed is expected to increase by almost 1,000 by the year 2015. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Beaverdam Creek Watershed

Lower Lanes Creek: 03040105081040

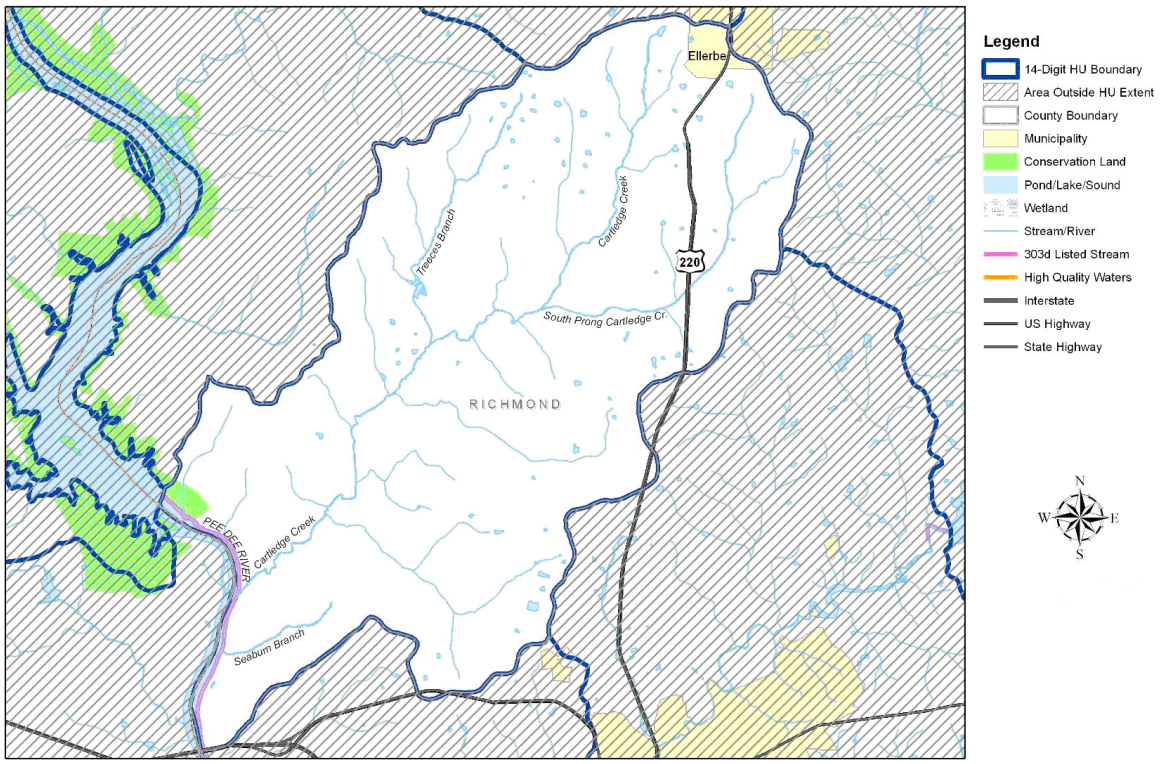
This is a newly designated TLW with more than 40 animal operations and approximately 30% of land in agriculture use. Approximately 23% of the stream length within this watershed is identified as impaired Overall according to 2006 DWQ 303(d) data. Some agricultural practices as well as an impoundment are likely contributors to impaired biological integrity within this watershed. This watershed contains portions of the Towns of Marshville and Peachland, the population of this watershed is expected to increase by more than 1,700 by the year 2015. In addition, the watershed includes Wildlife Resource Commission priority area and several Natural Heritage Element Occurrences, as well as areas of forest and wetlands.




Lower Lanes Creek Watershed

Cartledge Creek: 03040201010050

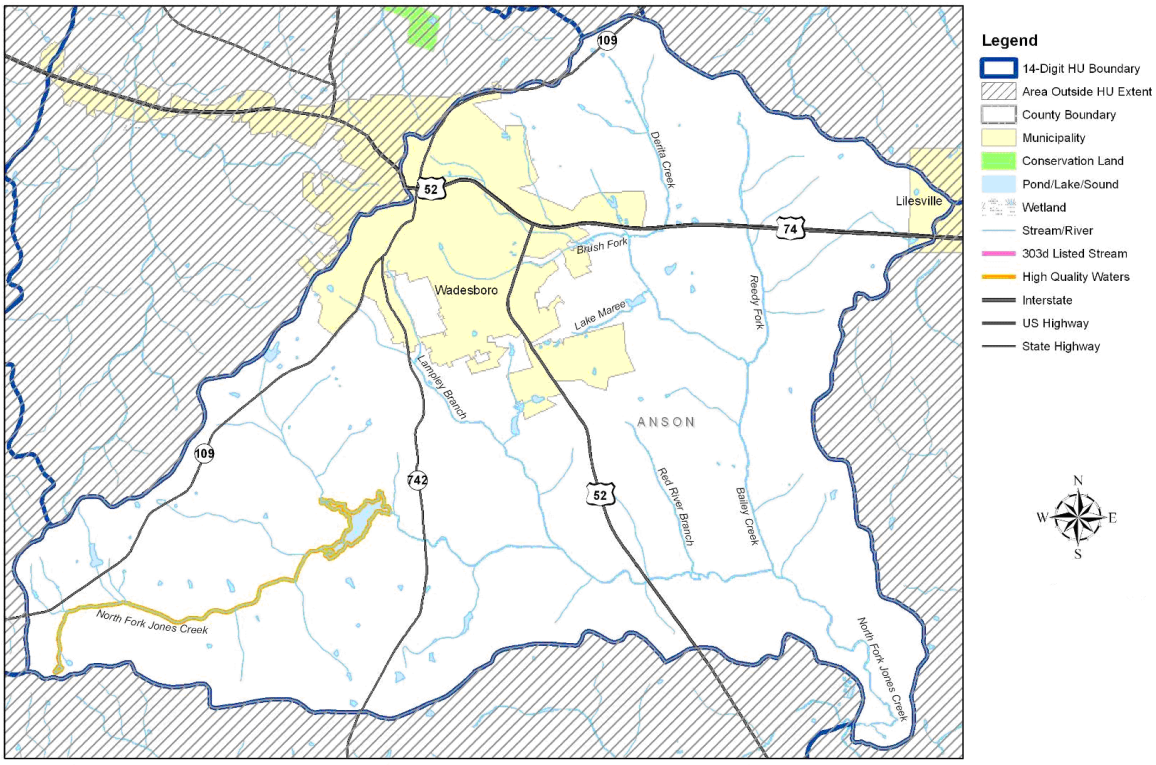
This is a newly designated TLW with almost 20 animal operations and approximately 5% of the stream length within this watershed has been identified as impaired for Aquatic Life and Fish Consumption according to the 2006 DWQ 303(d) data. Hydromodification resulting from Blewett Falls Dam is a likely contributor to low dissolved oxygen violations within this watershed, also there is a fish advisory for mercury toxicity within the Pee Dee River bordering this watershed. This watershed contains a portion of the Town of Ellerbe. In addition, this watershed has land under conservation already as gameland, several Natural Heritage Element Occurrences, as well as areas of forest and wetlands and Significant Natural Heritage Areas. Protection of this watershed would benefit the Pee-Dee River which the waters within it drain into and is identified as impaired.




Cartledge Creek Watershed

North Fork Jones Creek: 03040201020020

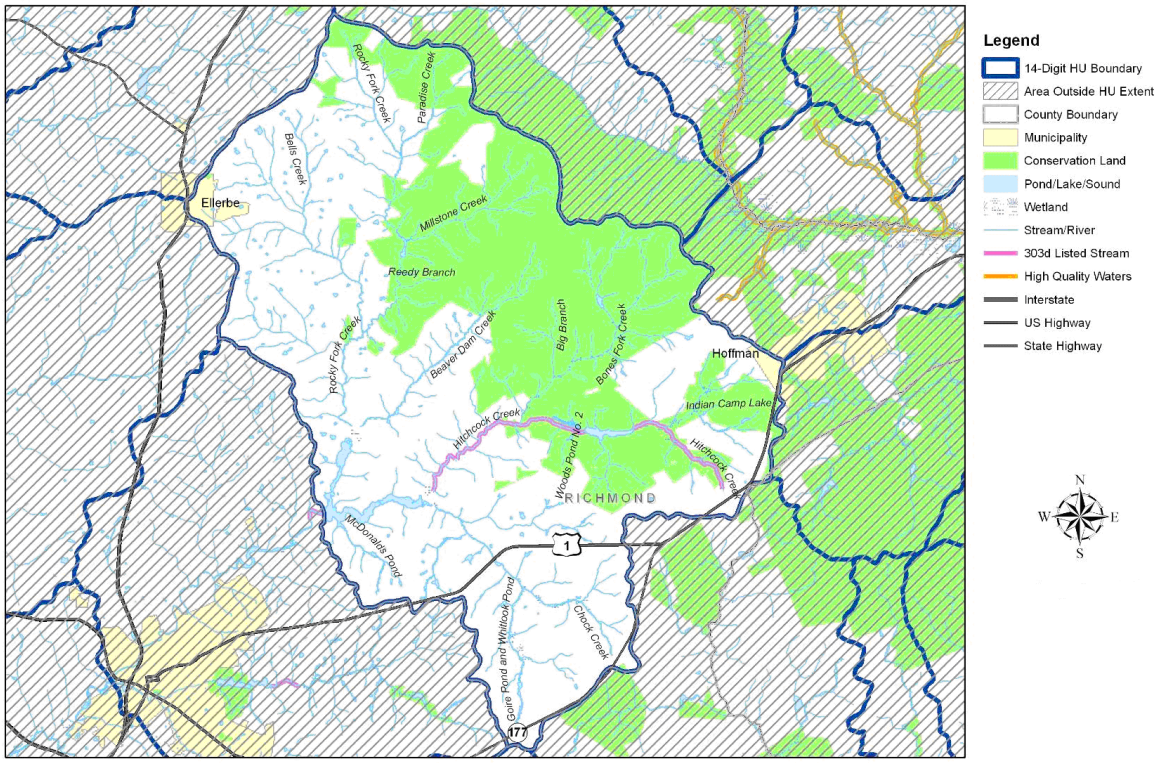
This is an existing TLW with several animal operations and approximately 11% of land is in agriculture use. This watershed contains portions of the Towns of Wadesboro and Lilesville. In addition, the watershed includes several Natural Heritage Element Occurrences, as well as areas of forest and wetlands. There are approximately 25 miles of Water Supply Waters within this watershed which service the Town of Wadesboro. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




North Fork Jones Creek

Hitchcock/Rocky Fork Creek: 03040201010010

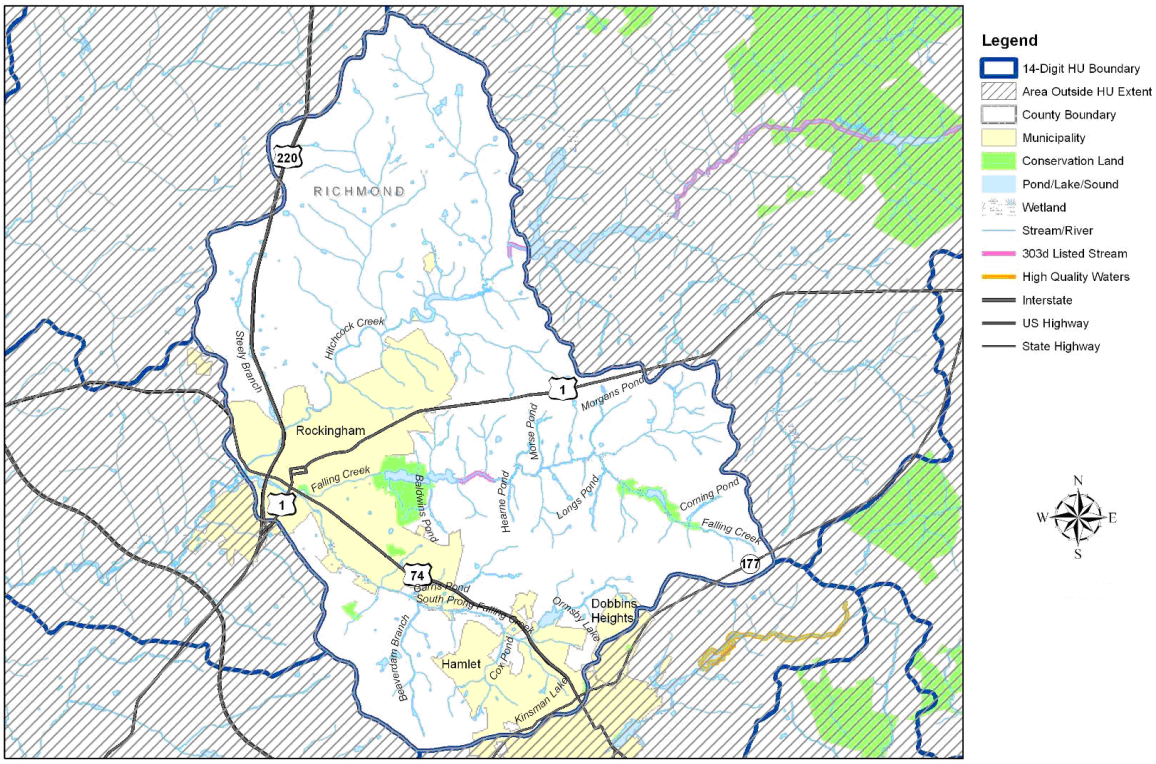
This is a newly designated TLW with more than 40 animal operations and approximately 11% of the land in agriculture use. This watershed contains portions of the Towns of Ellerbe and Hoffman. Approximately 7% of the stream length within this watershed is identified as impaired for Fish Consumption according to 2006 DWQ 303(d) data; an impoundment within the watershed may be a contributor to mercury violations. In addition, this watershed has over 160 documented Natural Heritage Element Occurrences, Significant Natural Heritage Areas and a significant amount of land under conservation, including the Wildlife Resources Commission Sandhills Gameland. There are 100 miles of Water Supply Waters within this watershed servicing the City of Rockingham. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Hithcock/Rocky Fork Creek Watershed

Hitchcock/Falling Creek: 03040201010020

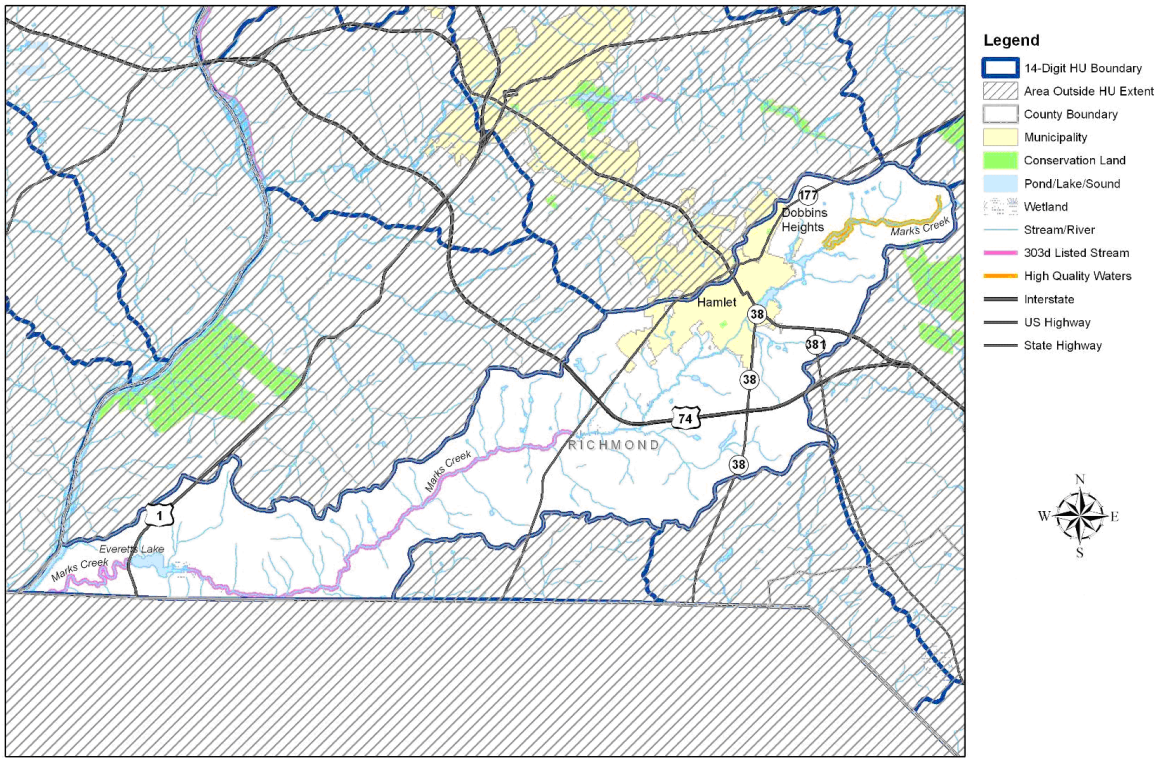
This is an existing TLW with several animal operations and approximately 14% of the land is in agriculture use. Approximately 2% of the stream length within this watershed is identified as impaired Overall according to 2006 DWQ 303(d) data; aquatic weeds are identified as the impairment within this watershed. This watershed contains portions of several communities including the Cities of Rockingham, Hamlet and the Town of Dobbins Heights, approximately 6% of the watershed is impervious. In addition, this watershed has several Natural Heritage Element Occurrences, Significant Natural Heritage Areas and some land under conservation, including the Wildlife Resources Commission Hinson Gameland, Ed Hull Park which is managed by Rockingham, Each Rockingham Park which is managed by East Rockingham, and Hamlet City Park which is managed by Hamlet. There are approximately 50 miles of Water Supply Waters within this watershed which service the City of Rockingham. Existing watershed improvement efforts taking place in this watershed will allow for the opportunity to continue implementing projects here and would cumulatively result in ecological uplift.




Hitchcock/Falling Creek Watershed

Marks Creek: 03040201010060

This is an existing TLW with several animal operations and approximately 12% of the land is in agriculture use. This watershed contains portions of the City of Hamlet and the Town of Dobbins Heights, approximately 4% of the watershed is impervious. Approximately 14% of the stream length within this watershed is identified as impaired Overall according to 2006 DWQ 303(d) data. Stormwater runoff is a likely contributor to impaired biological integrity within this watershed. In addition, this watershed has several Natural Heritage Element Occurrences, Significant Natural Heritage Areas, forest and wetlands and land under conservation, including Dobbins Height Park and East Side Park managed by the City of Hamlet. There are approximately 6 miles of Water Supply Waters within this watershed serving the City of Hamlet.




Marks Creek Watershed

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NC Wildlife Resources Commission. 2005. Wildlife Action Plan. Online at: http://www.ncwildlife.org/pg07_WildlifeSpeciesCon/WAP_complete.pdf

## For More Information

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919-715-1950
anjie.ackerman@ncmail.net

http://www.nceep.net/pages/lwplanning.htm

## Definitions

**8-digit Catalog Unit (CU)** – The USGS developed a hydrologic coding system to delineate the country into uniquely identified watersheds that can be commonly referenced and mapped. North Carolina has 54 of these watersheds uniquely defined by an 8-digit number. EEP typically addresses watershed – based planning and restoration in the context of the 17 river basins (each has a unique 6-digit number), 54 catalog units and 1,601 14-digit hydrologic units.

**14–digit Hydrologic Unit (HU)** – In order to address watershed management issues at a smaller scale, the U.S. Natural Resources Conservation Service (NRCS) developed methodology to delineate and uniquely identify watersheds at a scale smaller than the 8-digit catalog unit. A hydrologic unit is a drainage area delineated to nest in a multilevel, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters. North Carolina has 1,601 14-digit hydrologic units.

**Aquatic Habitat**–the wetlands, streams, lakes, ponds, estuaries, and streamside (riparian) environments where aquatic organisms (e.g., fish, benthic macroinvertebrates) live and reproduce; includes the water, soils, vegetation, and other physical substrate (rocks, sediment) upon and within which the organisms occur

**Benthic macroinvertebrates**–organisms living in or on the bottom substrate of aquatic habitats; include insect larvae, worms, snails, crayfish and mussels; can be used as indicators of stream water quality and stream habitat condition

**BMPs (best management practices)**–any land or stormwater management practice or structure used to mitigate flooding, reduce erosion & sedimentation, or otherwise control water pollution from runoff; includes urban stormwater management BMPs and agriculture/forestry BMPs

**EEP** – The North Carolina Ecosystem Enhancement combines existing wetlands restoration initiatives (formerly the Wetlands Restoration Program or NCWRP) of the N.C. Department of Environment and Natural Resources with ongoing efforts by the N.C. Department of Transportation (NCDOT) to offset unavoidable environmental impacts from transportation-infrastructure improvements.

**GIS** - A geographic information system integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

**High Quality Waters (HQW)** - Supplemental NC DWQ classification intended to protect waters with quality higher than state water quality standards. In general, there are two means by which a water body may be classified as HQW. They may be HQW by definition, or they may qualify for HQW by supplemental designation and then be classified as HQW through the rule-making process.

1) The following are HQW by definition:
• (Water Supply) WS-I, WS-II,
• SA (shellfishing area),
• ORW (outstanding resource water),
• Waters designated as Primary Nursery Areas (PNA) or other functional nursery areas by the Marine Fisheries Commission, or
• Native and special native (wild) trout waters as designated by the Wildlife Resources Commission.

2) The following waters can qualify for supplemental HQW designation:
• Waters for which DWQ has received a petition for reclassification to either WS-I or WS-II, or
• Waters rated as Excellent by DWQ,

II. Classifications by Other State and Federal Agencies

**NCDWQ** – North Carolina Division of Water Quality

**NCWRP** – The North Carolina Wetlands Restoration Program was a wetland restoration program under NC DENR and a predecessor of the NCEEP.

**Outstanding Resource Waters (ORW) -** Supplemental NC DWQ classification intended to protect unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance. To qualify, waters must be rated Excellent by DWQ and have one of the following outstanding resource values:

• Outstanding fish habitat or fisheries,
• Unusually high level of water-based recreation,
• Some special designation such as NC or National Wild/Scenic/Natural/Recreational River, National Wildlife Refuge, etc.,
• Important component of state or national park or forest, or
• Special ecological or scientific significance (rare or endangered species habitat, research or educational areas).
• No new discharges or expansions of existing discharges shall be permitted.

There are associated development controls enforced by DWQ. ORW areas are HQW by definition.

**Preservation** –the long-term protection of an area with high habitat and/or water quality protection value (e.g., wetland, riparian buffer), generally effected through the purchase or donation of a conservation easement by/to a government agency or non-profit group (e.g., land trust); such areas are generally left in their natural state, with minimal human disturbance or land-management activities

**RBRP** - The River Basin Restoration Priorities are documents that delineate specific watersheds (Targeted Local Watersheds) within a River Basin that exhibit both the need and opportunity for wetland, stream and riparian buffer restoration.

**Resource Professionals**–staff of state, federal, regional or local (city, county) natural resource agencies –including planners, water resources and storm water engineers, parks & recreation departments, water quality programs, regional councils of government, local/regional land trusts or other non-profit groups with knowledge/expertise and/or interest in local watershed issues and initiatives

**Restoration –**the re-establishment of wetlands or stream hydrology and wetlands vegetation into an area where wetland conditions (or stable streambank and stream channel conditions) have been lost; examples include: stream restoration using natural channel design methods coupled with re-vegetation of the riparian buffer; riparian wetlands restoration through the plugging of ditches, re-connection of adjacent stream channel to the floodplain, and planting of native wetland species; this type of compensatory mitigation project receives the greatest mitigation credit under the 401/404 regulatory framework

**Riparian –**relating to the strip of land adjacent to streams and rivers, including streambanks and adjoining floodplain area; important streamside zones of natural vegetation that, when disturbed or removed, can have serious negative consequences for water quality in streams & rivers

**TLW** - Targeted Local Watershed, are 14-digit hydrologic units which receive priority for EEP planning and restoration project funds.

**Use Support** –refers to the DWQ system for classifying surface waters based on their designated best use(s); at present, the DWQ primary stream classifications include the following: class C [fishing/boating & aquatic life propagation]; class B [primary recreation/direct contact]; SA [shellfish harvesting]; and WSW [water supply]. Supplemental classifications include High Quality Waters (HQW), Outstanding Resource Waters (ORW), Nutrient Sensitive Waters (NSW), Trout Waters (Tr), and Swamp Waters (Sw). All waters must at least meet the standards for class C waters

**USGS** – United States Geological Survey

**Watershed –**all the land area which contributes runoff to a particular point along a stream or river; also known as a "drainage basin", although the term *Basin* usually implies a very large drainage system, as of an entire river and its tributary streams

**Watershed Restoration Plan** – Older versions of RBRP documents were called Watershed Restoration Plans. In essence, they are the same thing.