Hiwassee River Basin Restoration Priorities 2008

Amended July 2018

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Cover Photo: Hiwassee River, Clay County

Introduction

Tusquittee Creek

The Hiwassee River Basin Restoration Priorities (RBRP) were established in 2003. The original plan selected five watersheds to be targeted for stream, wetland and riparian buffer restoration and protection and watershed planning efforts. In 2008, the plan was updated to retain four of the original watersheds, and present an additional seven Targeted Local Watersheds (TLWs) for the Hiwassee River Basin. One 2001 TLW (Shooting Creek) was not retargeted due to changes in the watershed and a reevaluation of local priorities. This 2018 interim amendment is intended to provide current information regarding planning activities, supplement information regarding land cover within each 8-digit hydrologic unit, restore document links and maintain accurate contact information.

Agency, division and personnel changes have occurred since the creation of the original document. Session Law 2015-1 changed the name of the Ecosystem Enhancement Program (EEP) to the North Carolina Division of Mitigation Services (DMS) on March 16, 2015. Furthermore, the Department of Environment and Natural Resources (DENR) was renamed the Department of Environmental Quality (DEQ) on September 18, 2015.

The Division of Mitigation Services is currently in the process of updating its watershed prioritization process. While DMS transitions to a new approach it will maintain the existing watershed priorities and update supporting data. If field observations or land cover analysis identify significant change within an 8-digit hydrologic unit further analysis will be conducted to re-examine the existing watershed priorities.

This document is a supplement to DMS's *Watershed Restoration Plan for the Hiwassee River Basin* (2001), and draws information from the detailed document, *Hiwassee River Basinwide Water Quality Plan—March 2007*, which was written by the NC Division of Water Resources (NCDWR). Therefore, this document does not provide detailed information found in those documents but provides a quick overview of DMS and the criteria DMS uses to select new Targeted Local Watersheds and then describes the newly selected Targeted Local Watersheds.

In past documents, watersheds were delineated by the NCDWR "subbasin" units and the smaller Targeted Local Watersheds were defined by USGS 14-digit hydrologic unit (HU). In this document, the watersheds are defined by the USGS 8-digit cataloging units and the Targeted Local Watersheds continue to be defined by the USGS 14-digit hydrologic unit.

What is a River Basin Restoration Priority?

DMS 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 DMS planning and project funds. The 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.

North Carolina General Statute 143-214.10 charges DMS 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.

Criteria for Selecting Targeted Local Watersheds

DMS evaluates a variety of GIS data and resource and planning documents on water quality and habitat conditions in each river basin to select TLWs. Public comment and the professional judgment 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.

TLWs that were chosen for the last Watershed Restoration Plan or River Basin Restoration Priorities document are reevaluated. If new information reveals that a watershed is not a good TLW candidate, then it will be removed from the TLW list. An explanation of the reasons for its removal from the list is provided in the last section of this document, which provides descriptions of each TLW chosen and delisted.

Problems: DMS evaluates DWR use support ratings, the presence of impaired /303(d)-listed streams, and DWR Basinwide Assessment reports to identify streams with known problems. DMS also assesses the potential for degradation by evaluating land cover data, riparian buffer condition, and road density.

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

Opportunity: DMS 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. DMS 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, NCDEQ regional staff (e.g., Wildlife Resources Commission), and local/regional land trusts and watershed organizations are considered heavily in the selection of Targeted Local Watersheds. For the Hiwassee basin, input from the Hiwassee River Watershed Coalition was especially helpful. 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 DMS restoration and preservation projects and Local Watershed Planning initiatives.

Hiwassee River Basin Overview

The North Carolina portion of the Hiwassee River basin is 644 mi^2 and is located in the southwestern corner of North Carolina's Blue Ridge Province of the Appalachian Mountains. The headwaters of the Hiwassee River originate in North Carolina and north Georgia. It flows west into Tennessee and eventually merges with the Tennessee River. The Tennessee Valley Authority (TVA) dams the Hiwassee River for production of hydroelectric power, forming Lake Chatuge, Appalachia Lake, and Hiwassee Lake in North Carolina.

Clay County horse farm

The Hiwassee River basin is largely rural, with much of its population located in and around Hayesville, Murphy, and Andrews. It comprises most of Cherokee and Clay Counties, which have a combined population of 33,000 people, according to the 2000 census. Only about 2% of the area is considered urban. Agricultural land is important in the basin, with nearly 20% of the area in cultivated crop, pasture, and managed herbaceous vegetation. However, most of the land in the basin is forested, with about half of the forested land located in the Nantahala National Forest, which comprises 32% of the land area in the basin.

The Hiwassee River and several of its tributaries (Valley River, Brasstown Creek, Hanging Dog Creek, Tusquitee Creek, and Fires Creek) are priority conservation areas for the Wildlife Resource Commission. Brasstown Creek and the Valley River are the largest unimpounded streams in the basin and host most of their historically known fauna (NCWRC, 2005). The draft 2008 303(d) list includes a Persimmon Creek and a section of the Valley River.

The basin consists of two larger watershed areas, called 8-digit catalog units, 06020002 and 06020003, and it contains twenty-two smaller watershed areas, or 14-digit hydrologic units. Catalog unit 06020002 is by far the larger of the two areas and contains twenty 14-digit hydrologic units. Catalog unit 06020003 is at the far southwestern corner of the basin and contains only two 14-digit hydrologic units. There are currently no TLWs targeted in 06020003.

From 2005 to 2007, DMS developed a local watershed plan for the Peachtree-Martins Creek watershed, which consists of four 14-digit hydrologic units. This plan identified a number of management strategies to address current problems and future problems resulting from additional population growth. This process resulted in a set of priority restoration and preservation projects. DMS has implemented two stream and wetland restoration projects in the Martins Creek watershed. The Hiwassee River Watershed Coalition is also working to implement recommendations of the plan.

Hiwassee River Basin Restoration Goals

Based on an assessment of existing watershed characteristics and resource information, DMS has developed restoration goals for the Hiwassee River Basin. The goals reflect DMS's focus on restoring wetland and stream functions such as maintaining and enhancing water quality, restoring hydrology, and improving fish and wildlife habitat.

Tusquittee Creek

Bank erosion on Town Creek

- Implement wetland and stream restoration projects that reduce sources of sediment and nutrients by restoring riparian buffer vegetation, stabilizing banks, and restoring natural geomorphology, especially in headwater streams.
- Restore and protect habitat for priority aquatic species in the basin [see Wildlife Resource Commission (2005) for a complete list].
- Prioritize project implementation in the Peachtree-Martins Creek local watershed planning area.
- Cooperate with the Hiwassee River Watershed Coalition and resource agencies to help leverage federal and state grant funding for watershed restoration efforts.
- Work with landowners, local resource agencies, local land trusts and other nongovernmental groups to protect and restore watersheds through restoration and preservation.

CU 06020002 2011 Land Use/Land Cover Data

Class	Percentage
Water	2.3
Developed	6.6
Barren	0.2
Forest	82.8
Shrubland	1.1
Herbaceous	1.7
Planted/Cultivated	5.0
Wetlands	0.1

CU 06020003 2011 Land Use/Land Cover Data

Class	Percentage
Water	0.0
Developed	5.5
Barren	0.1
Forest	83.1
Shrubland	2.8
Herbaceous	2.9
Planted/Cultivated	5.6
Wetlands	0.1

Hiwassee River Basin and Targeted Local Watershed Map

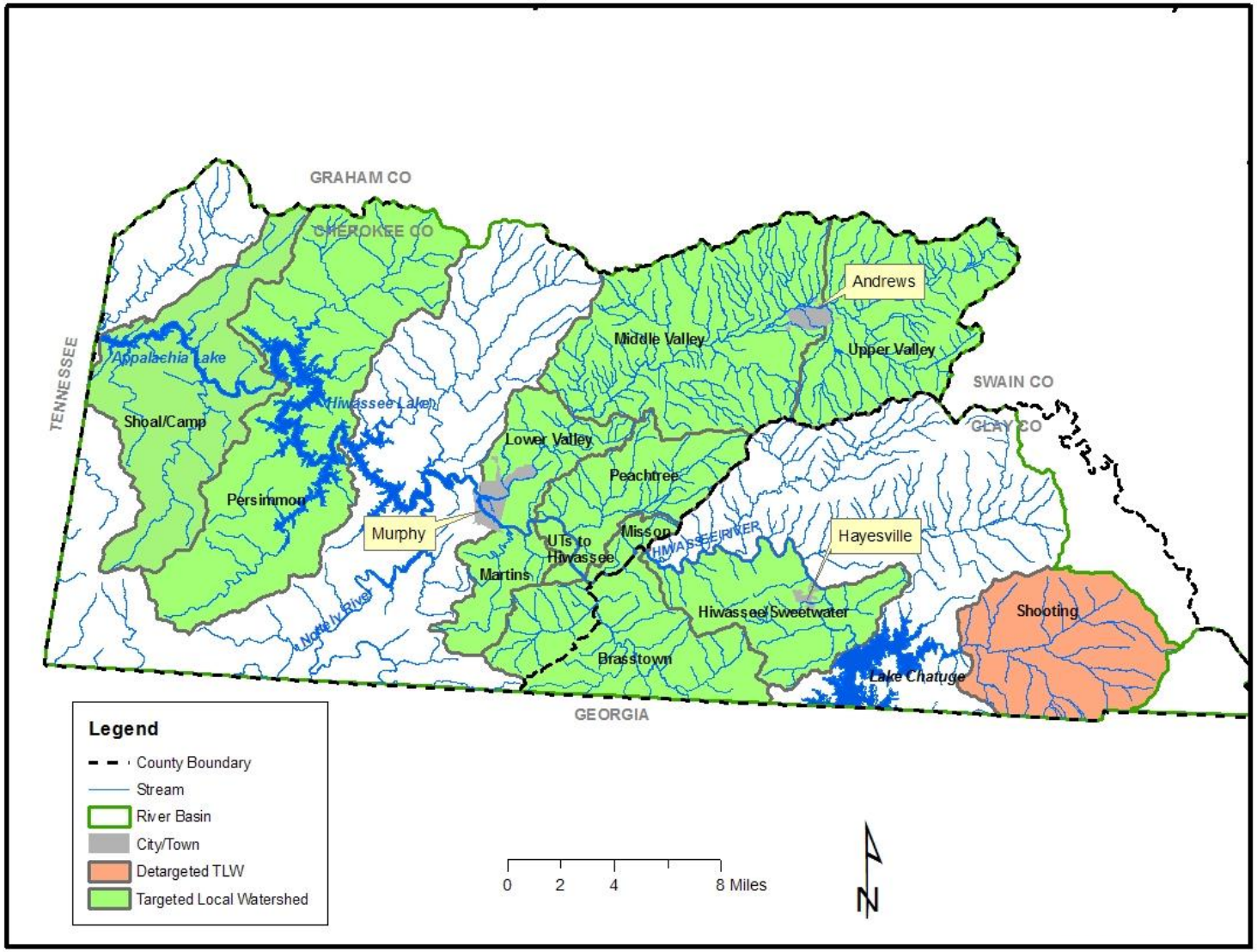


Table 1. Targeted Local Watershed Summary Table

Major Streams	14-digit Hydrologic Unit	Area (sq mi)	Land Cover: % Developed Area	Land Cover: % Agriculture	Stream Miles on Draft 2008 303(d) List	HQW & ORW Stream Miles	WSW Stream Miles	% of Streams with Trout Classification	# of NHEOs	% of Land in Conservation	% of Streams with Forested Buffer	Land Cover: % Forest & Wetland	Notes
Hiwassee R, Sweetwater Cr	06020002060010	27	9	20	0	0	72	0	6	1	66	71	Local priority
Brasstown Cr	06020002090010	36	5	16	0	0	164	0	4	0	76	78	2001 TLW
Unnamed tributaries to Hiwassee R	06020002090020	2	6	19	0	0	8	0	6	0	74	74	Peachtree-Martins LWP
Upper Valley R	06020002100010	42	5	3	0	15	0	58	13	56	89	92	2001 TLW
Middle Valley R	06020002100020	62	7	8	~5 miles of the Valley R	3	18	48	16	32	85	85	2001 TLW
Lower Valley R	06020002100030	16	15	8	~3 miles of the Valley R	0	4	45	9	15	77	77	2001 TLW
Peachtree Cr	06020002100040	22	6	14	0	0	7	0	9	23	79	79	Peachtree-Martins LWP
Mission Cr	06020002100050	4	9	22	0	0	18	0	8	15	71	69	Peachtree-Martins LWP
Martins Cr	06020002170010	12	8	14	0	0	0	0	3	0	68	77	Peachtree-Martins LWP
Persimmon Cr	06020002180010	80	4	5	~6 miles of Persimmon Cr	0	0	47	12	38	79	85	Local priority
S. Shoal, N. Shoal, Camp Cr	06020002180020	50	3	4	0	0	0	43	5	28	85	90	Local priority

*2001 TLW=targeted local watershed in 2001 plan; LWP=local watershed plan
Other table acronyms: WSW=DWR Water Supply Watershed; HQW=DWR High Quality Water; ORW=DWR Outstanding Resource Water; NHEO=Natural Heritage Element Occurrence, as maintained by the NC Natural Heritage Program

Table 2. 14-Digit HUCs Land Use/Land Cover Changes from 2001-2011				
	Increased Impervious Surface (acres)	**Forest Converted to Developed (acres)**	**Forest Converted to Agriculture (acres)**	**Loss of Wetland (acres)**
Catalog Unit 06020002				
06020002060010	38.3	17.1	90.1	--
06020002090010	2.0	22.2	105.9	--
06020002090020	--	2.4	66.5	--
06020002100010	11.8	7.8	2.7	--
06020002100020	31.1	11.8	34.0	--
06020002100030	32.9	25.1	14.5	--
06020002100040	12.7	6.7	28.0	0.4
06020002100050	0.2	0.4	1.6	--
06020002170010	0.7	26.9	74.5	--
06020002180010	--	31.4	179.0	--
06020002180020	1.3	3.8	135.4	--

Discussion of Targeted Local Watersheds in Hiwassee River Basin

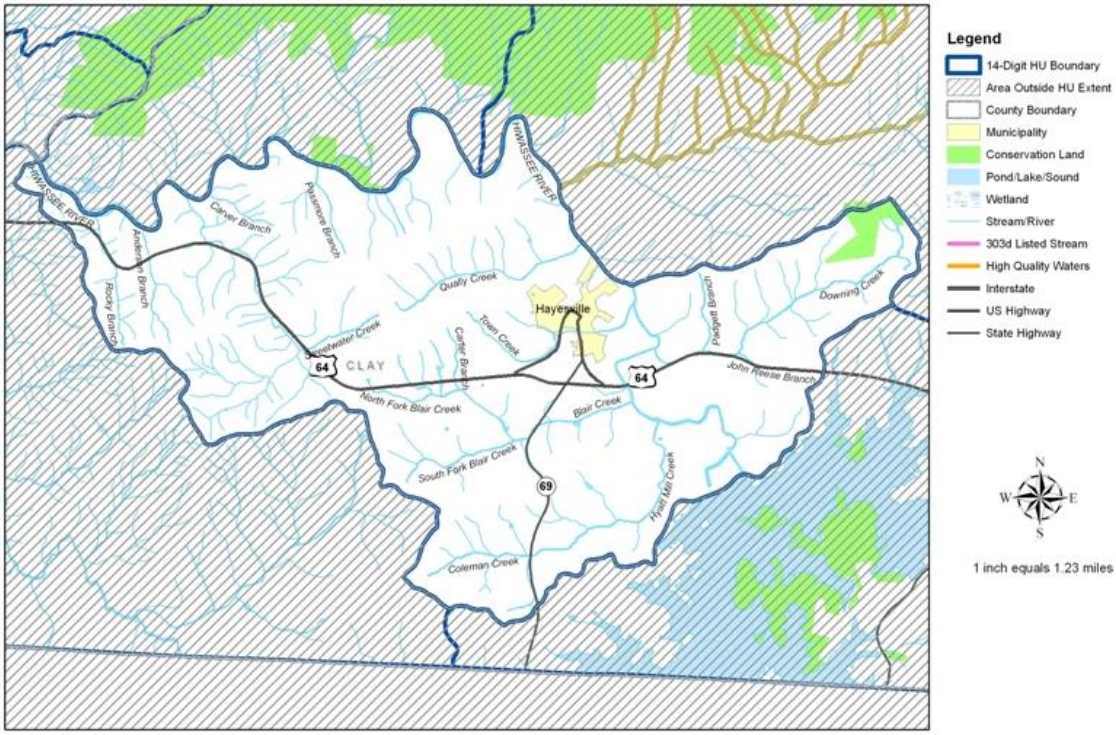
This section provides a description and map of each watershed chosen as a Targeted Local Watershed (TLW) in 2008.

Targeted Local Watersheds

Hiwassee River/Sweetwater Creek: 06020002060010

This watershed includes Hayesville and surrounding development. A majority of the streams are classified as Water Supply Waters. Twenty percent of its area is in agricultural use, primarily cattle pasture. Although there are no 303(d) listed streams in the watershed, it contains a number of degraded streams, including Sweetwater Creek, which is severely impacted by cattle access. It has much need for channel and riparian buffer restoration, and it is a restoration priority of the Hiwassee River Watershed Coalition.

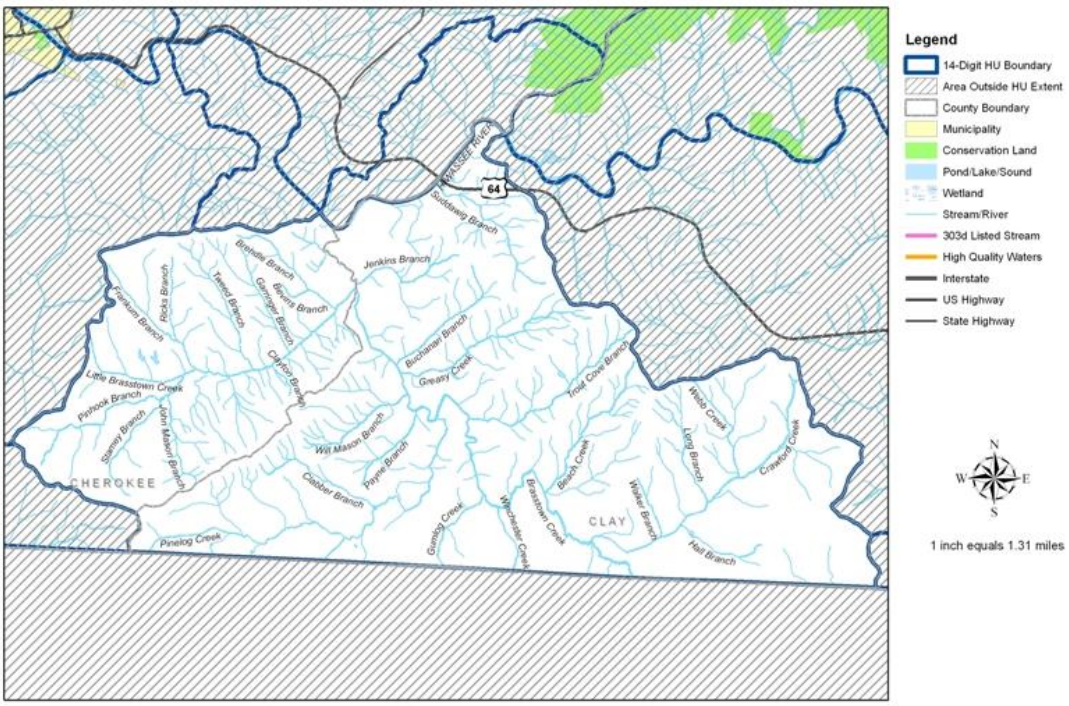
Hiwassee River/Sweetwater Creek watershed



Brasstown Creek: 06020002090010

The Brasstown Creek watershed was a 2001 TLW and has long been a conservation priority of the Wildlife Resource Commission due to its important aquatic community. It is a major source of sediment to the Hiwassee River, and the Hiwassee River Watershed Coalition has been working with Brasstown landowners to restore channels and riparian areas since 1999. As with the Hiwassee River/Sweetwater Creek watershed, none of its streams are classified as Trout waters; however, 100% of its streams are classified as Water Supply Waters.

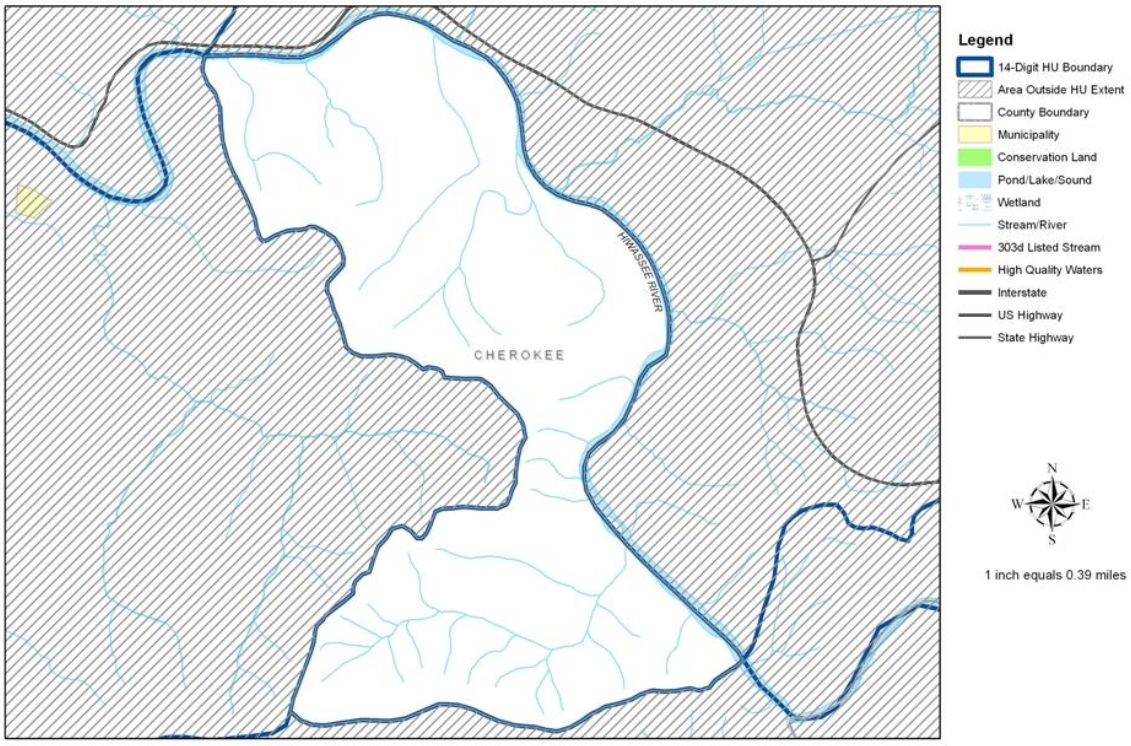
Brasstown Creek watershed



Unnamed Tributaries to Hiwassee River: 06020002090020

This watershed is only 2 mi^2 and includes very small tributaries to the Hiwassee River near Murphy. Nineteen percent of the land area is in agricultural use, and half of its waters are classified as Water Supply Waters. The US-64 bypass, which is currently in construction, cuts through this watershed. It is one of four 14-digit hydrologic units in the Peachtree-Martins Creek local watershed planning area.

Unnamed Tributaries to Hiwasse River watershed

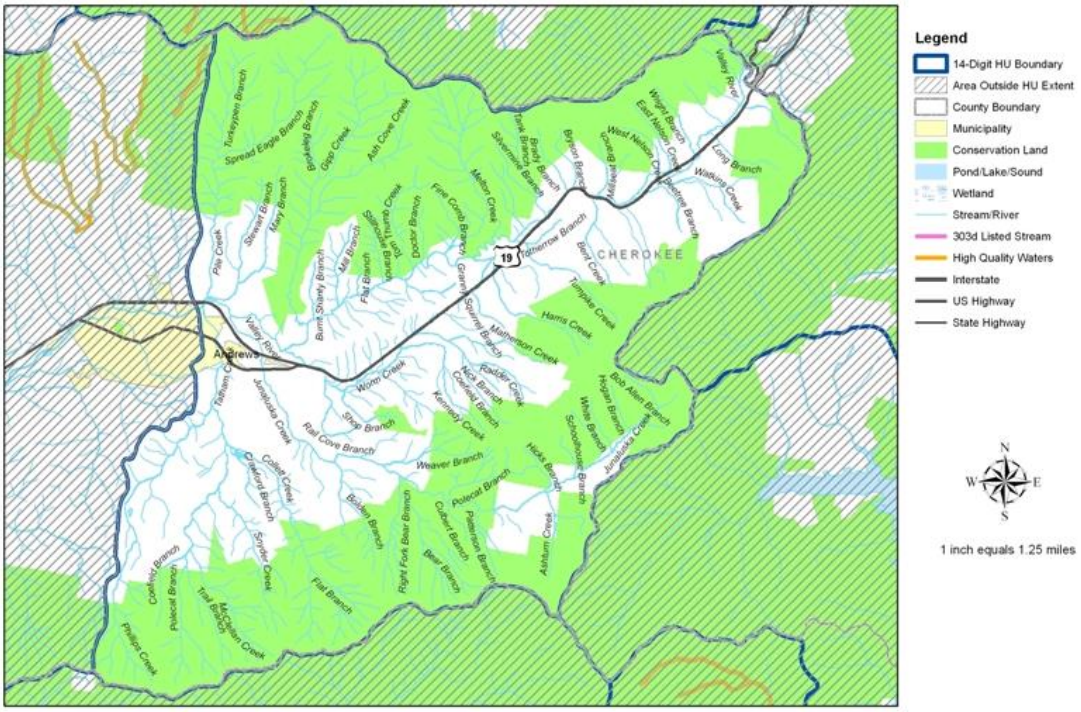


Valley River Watersheds: Upper (06020002100010), Middle (06020002100020), and Lower (06020002100030)

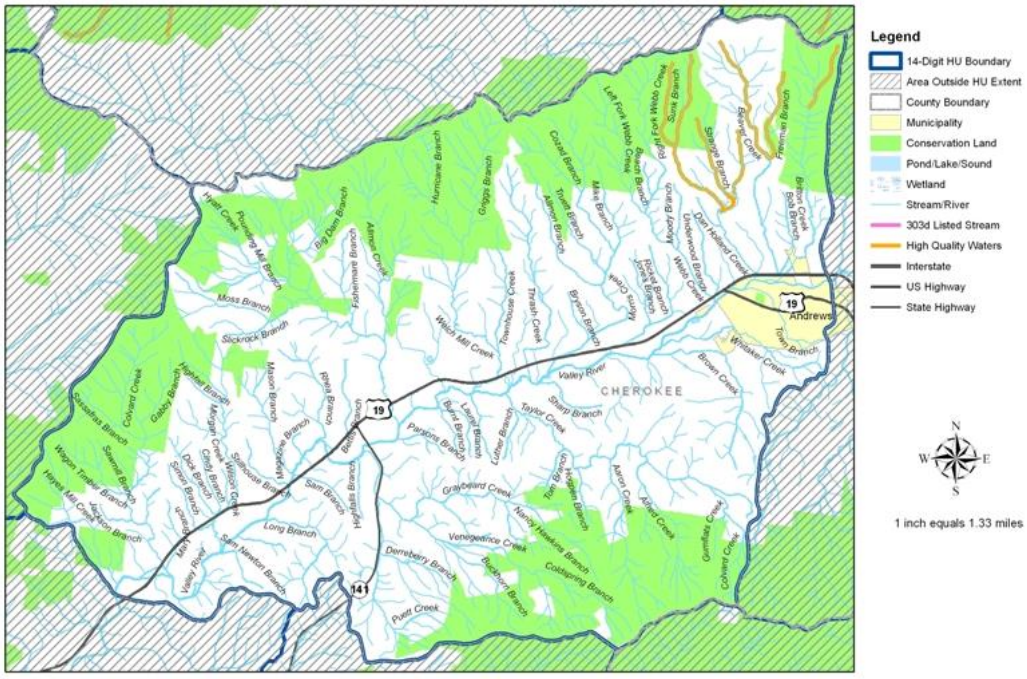
All three of these watersheds were TLWs identified in 2001, and the Valley River watershed is a conservation priority of the NC Wildlife Resources Commission. This watershed is also a priority of the Hiwassee River Watershed Coalition, which began its Valley River Watershed Restoration Project in 2003, restoring key sites along the Valley River and its tributaries. The Land Trust for the Little Tennessee is developing a river corridor protection plan for the Valley River with the Coalition.

Over half of the Upper Valley River watershed is in national forest, 58% of its streams are classified as Trout waters, and 89% of its streams have forested buffers. The Lower Valley River watershed has the highest amount of developed area (15%) in the Hiwassee basin, with the Valley River passing through Murphy. All three of the watersheds have high numbers of Natural Heritage Element Occurences. The Middle and Lower Valley River watersheds include a section of the Valley River that is on the draft 2008 303(d) list due to excess turbidity.

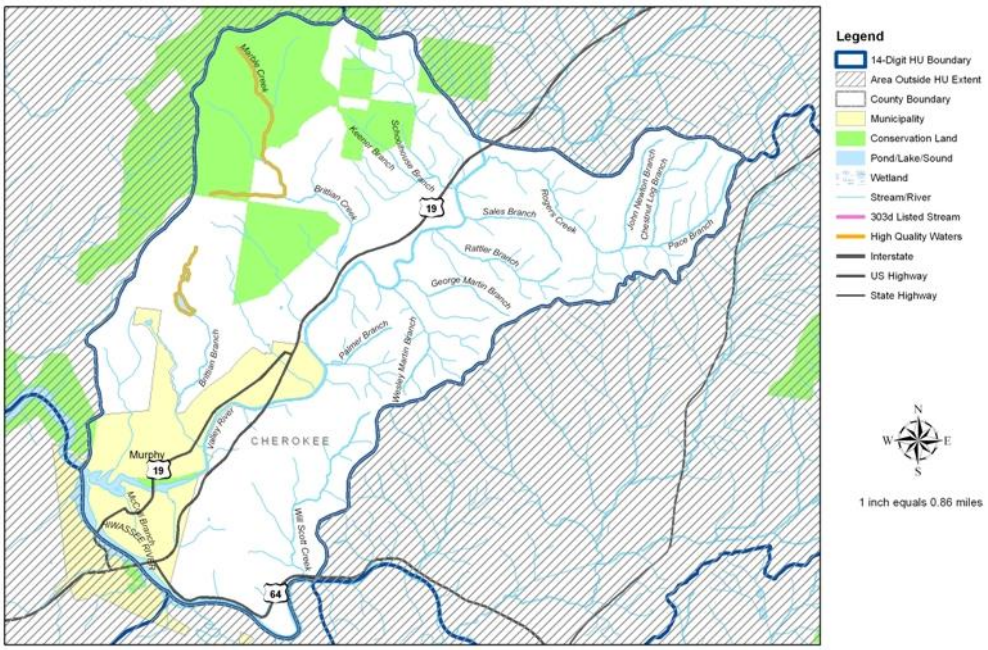
Upper Valley River watershed



Middle Valley River watershed



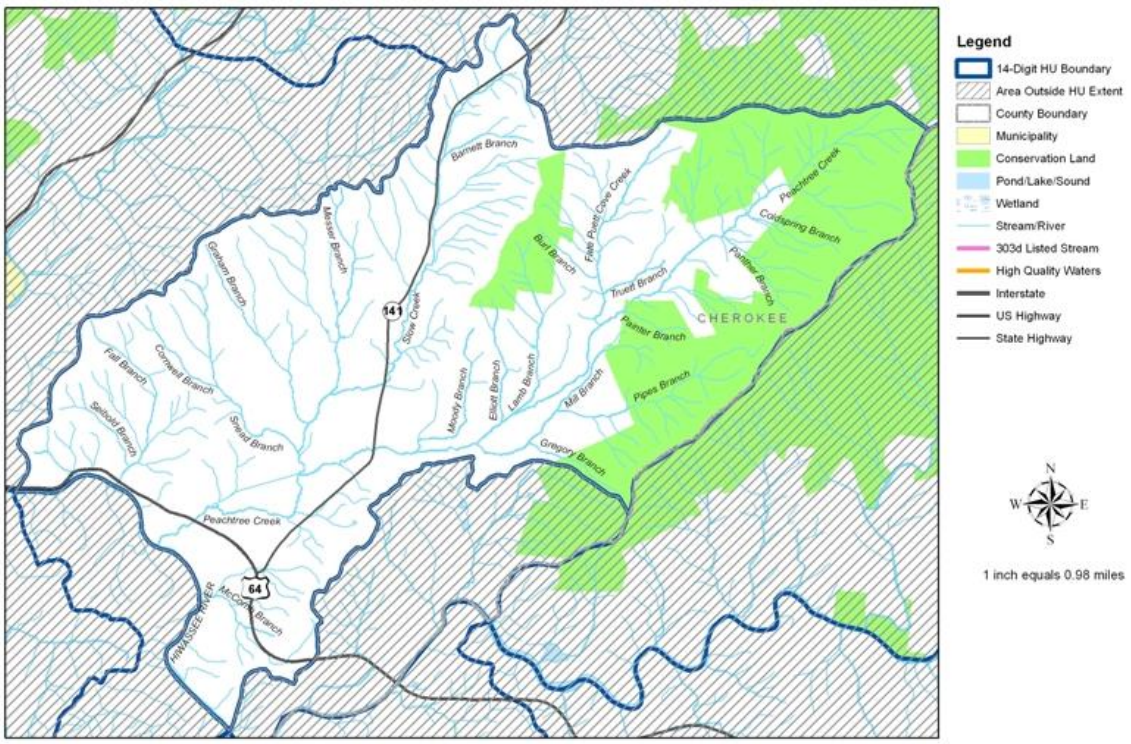
Lower Valley River watershed



Peachtree Creek: 06020002100040

The Peachtree Creek watershed is one of four 14-digit hydrologic units in the Peachtree-Martins Creek local watershed planning area. The US-64 bypass, which is currently in construction, cuts through this watershed, and it is expected that increased commercial and residential development will occur in this area. McComb Branch, a tributary to the Hiwassee River, is the focus of a stormwater impact and planning study by the Hiwassee River Watershed Coalition. Approximately 80% of this watershed is forested, and there are good opportunities to preserve forested tracts that are highly desirable for development.

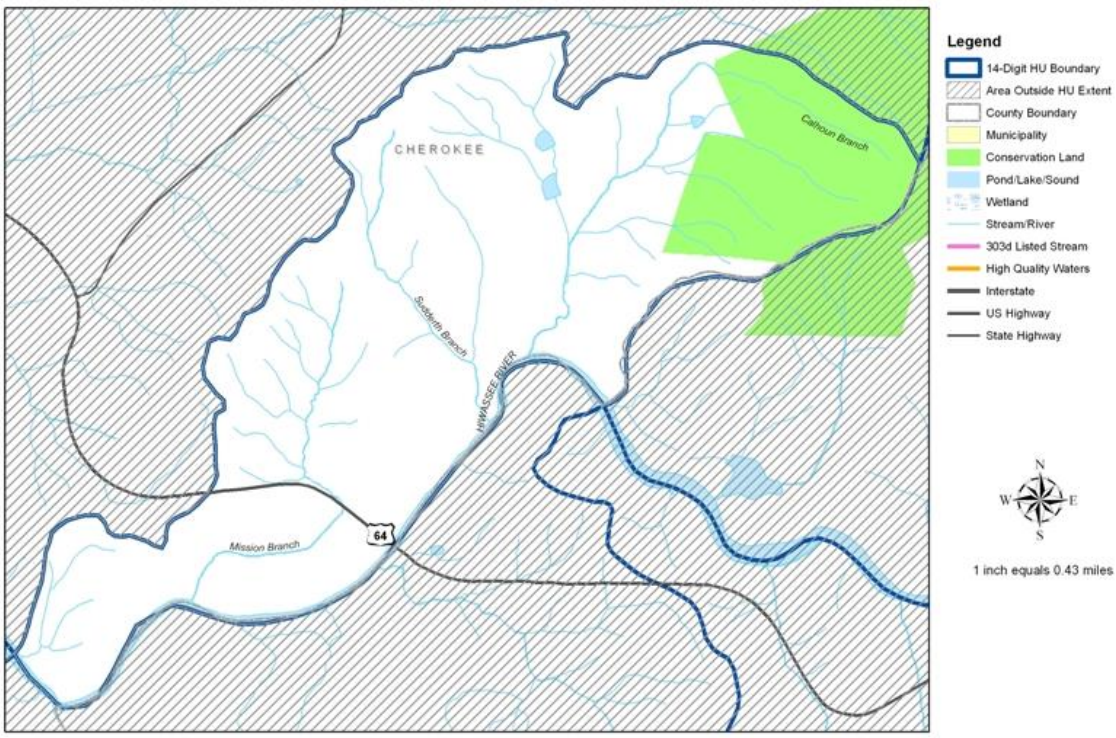
Peachtree Creek watershed



Mission Creek: 06020002100050

This watershed is only 4 mi^2 and includes Mission Creek and Calhoun Creek. It is one of four 14-digit hydrologic units in the Peachtree-Martins Creek local watershed planning area. Twenty-two percent of this watershed is in agriculture, including cattle pasture and a large vegetable farm in the Hiwassee River valley. Mission and Calhoun Creeks are degraded by both residential and agricultural stressors. All of the streams in this watershed are classified as Water Supply Waters.

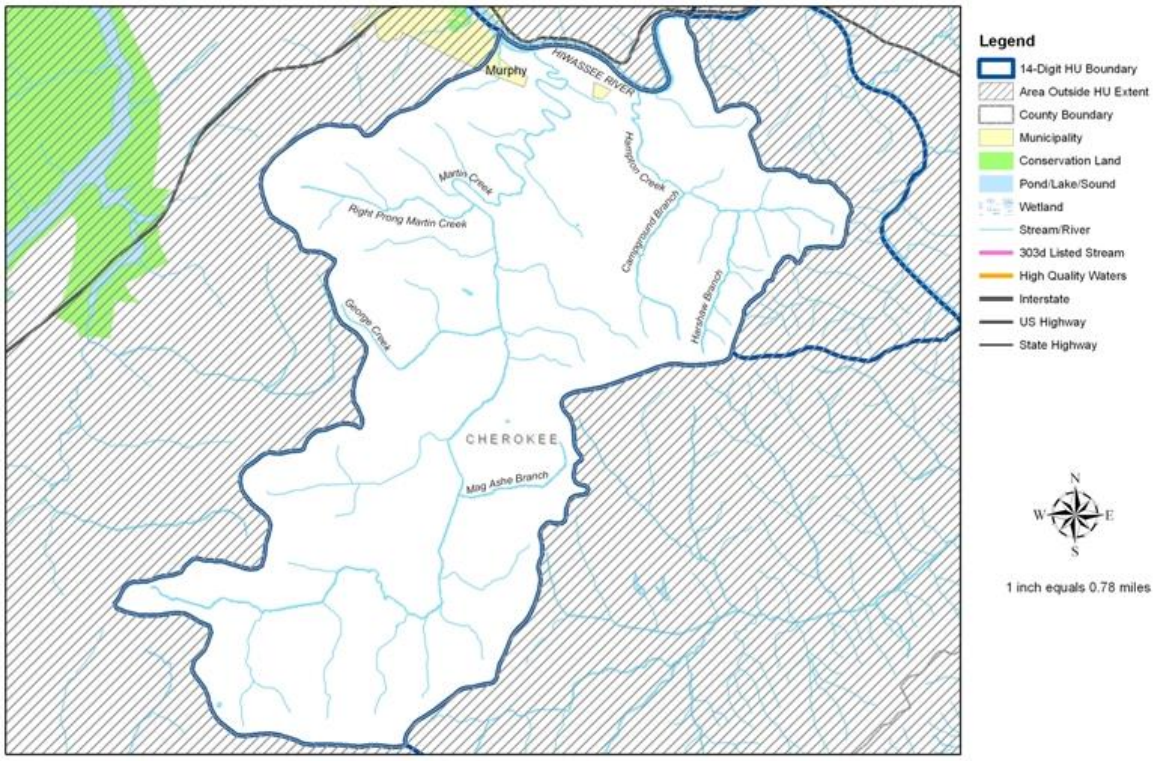
Mission Creek watershed



Martins Creek: 06020002170010

The Martins Creek watershed is one of four 14-digit hydrologic units in the Peachtree-Martins Creek local watershed planning area. The US-64 bypass, which is currently in construction, cuts through the downstream section of this watershed. Much of the Martins Creek valley is in cattle pasture, and the stream is impacted by high nutrient and fecal coliform bacteria levels and channelization; only 68% of the streams in this watershed have an adequate forested buffer. There are two DMS mitigation projects in design in this watershed, including one that will restore tributary that is severely impacted by cattle access, and another that will restore wetlands and streams in a former pasture area along Martins Creek and will preserve a number of high quality headwater streams.

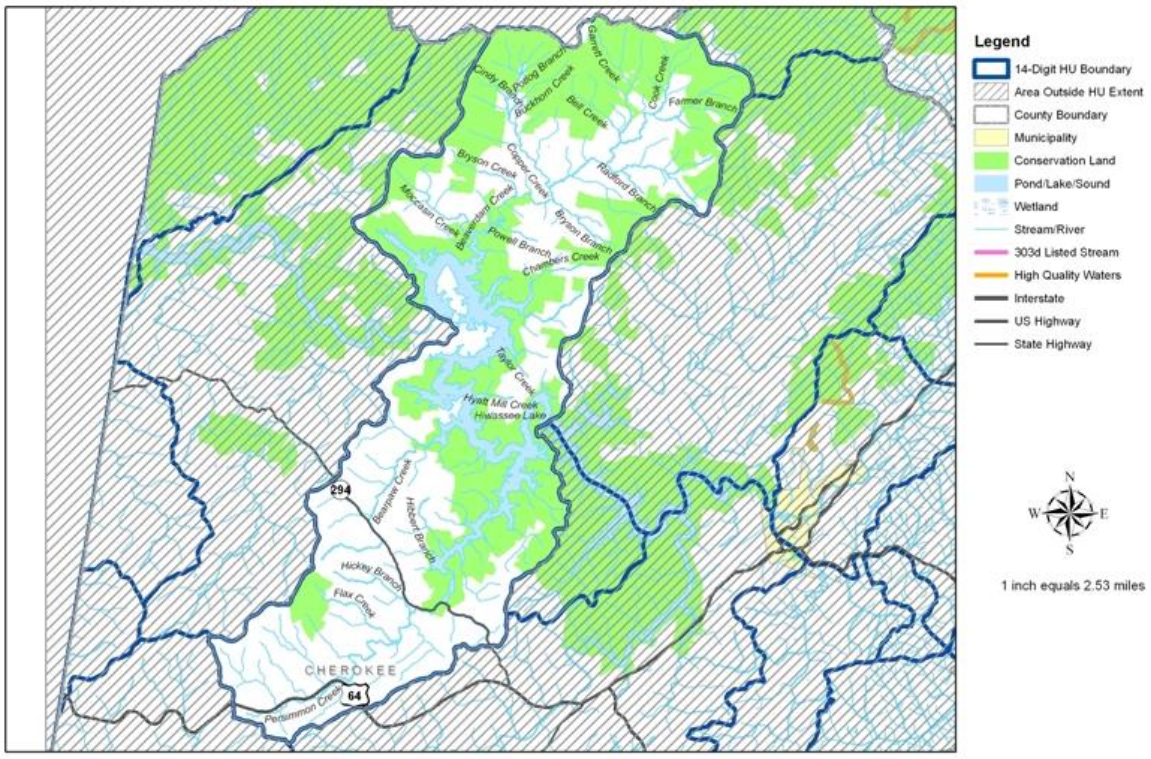
Martins Creek watershed



Persimmon Creek: 06020002180010

Persimmon Creek and its northern neighbor, Beaverdam Creek, drain to Hiwassee Lake. Six miles of Persimmon Creek are on the draft 2008 303(d) list due to a degraded fish community. About half of the streams in this watershed are classified as Trout waters, and almost 40% of the land area is in Nantahala National Forest, much along Hiwassee Lake and in the headwaters of Beaverdam Creek. The southern section of this watershed that drains Persimmon Creek is a new priority area of the Hiwassee River Watershed Coalition, which hopes to build on stream restoration efforts begun in 2006 by the Cherokee County Soil and Water Conservation District. The Coalition intends to develop a watershed plan for the Persimmon Creek watershed. As this is a very large watershed (80 mi^2), DMS recommends that any restoration or preservation efforts focus on the southern Persimmon Creek portion of the watershed.

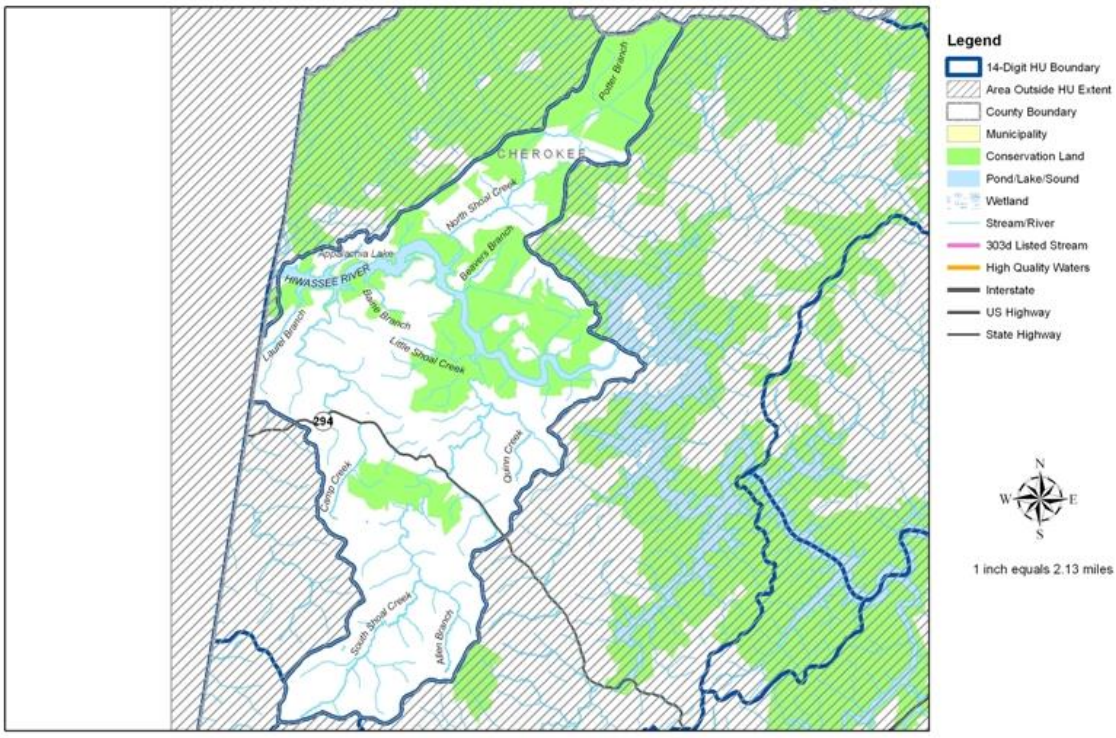
Persimmon Creek watershed



South Shoal/North Shoal/Camp Creek: 06020002180020

South and North Shoal Creeks and Camp Creek drain a 50 mi^2 watershed to Appalachia Lake on the far western edge of the basin. About 90% of the land area in the watershed is forested, and 28% of the land is in Nantahala National Forest. There are a number of high value wetlands on the Camp and South Shoal Creek side of the lake that are not protected at this time but are conservation priorities of the Land Trust for the Little Tennessee. In addition, the acquisition of the Wilderness Lake tract, located on the southern side of the lake, is being considered by state officials. DMS recommends that any restoration or preservation efforts focus on the southern (South Shoal and Camp Creek) portion of this watershed.

South Shoal/North Shoal/Camp Creek watershed



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NC Division of Water Resources Basinwide Planning Program. March 2007. Hiwassee River Basinwide Water Quality Plan. https://deq.nc.gov/about/divisions/water-resources/planning/basin-planning/water-resource-plans/hiawasee-2007

NC Wetlands Restoration Program. 2002. Watershed Restoration Plan for the Hiwassee River Basin.

NC Wildlife Resources Commission. 2005. Wildlife Action Plan.

For More Information

Visit the DMS Watershed Planning Contacts page located here: https://files.nc.gov/ncdeq/Mitigation%20Services/Watershed_Planning/Planning_Guidance_Docs/Watershed%20Planning%20Contacts.pdf

Definitions

DMS – The North Carolina Division of Mitigation Services 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.

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

USGS – United States Geological Survey

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. DMS 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.

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

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.

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

NCDWR – North Carolina Division of Water Resources

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