# Savannah River Basin Restoration Priorities 2008

Amended July 2018

**TABLE OF CONTENTS**



**Cover Photo:** Chattooga River, Macon-Jackson County

## Introduction

The Savannah River Basin Restoration Priorities (RBRP) were established in 2001. The original plan selected a single watershed in the basin (the Horsepasture River) to be targeted for stream, wetland and riparian buffer restoration and watershed planning efforts. A 2008 update to the original plan designated two additional Targeted Local Watersheds (TLWs) for the Savannah River Basin. 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 RBRP 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 and an update to the *Watershed Restoration Plan for the Savannah River Basin* (2001) and draws from information presented in the *Savannah River Basinwide Water Quality Plan – March 2007*, developed by the NC Division of Water Resources (DWR). The current document provides a quick overview of DMS, the criteria DMS uses to select new Targeted Local Watersheds and then describes the newly selected Targeted Local Watersheds.

In past restoration plan documents, watersheds within each basin 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 major component watersheds within the river basin are defined by the USGS 8-digit cataloging units (CUs) while the Targeted Local Watersheds selected within the CUs continue to be defined by the USGS 14-digit hydrologic unit (HU).

## What is a River Basin Restoration Priority?

*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.

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.

## Criteria for selecting Targeted Local Watersheds

DMS evaluates a variety of GIS data and available 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.

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

**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 quality resource waters, water supply watersheds, trout waters, natural heritage elements (rare/endangered species) and aquatic habitat priority areas.

**Opportunity:** DMS reviews restoration and protection projects that are already on the ground, such as Clean Water Management Trust Fund projects, Clean Water Act Section 319 projects, and existing lands in conservation. 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. 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.

## Savannah River Basin Overview

The Savannah River basin in North Carolina comprises the northernmost headwaters of a 9,850-square mile river system stretching along the South Carolina-Georgia border and emptying to the Atlantic Ocean near Savannah, Georgia. The North Carolina portion of the Savannah basin, located along the southeastern flank of the Blue Ridge physiographic province, amounts to approximately 171 square miles total, making it the smallest river basin in North Carolina. Major streams in the westernmost portion of the basin are the Tullulah and Chattooga Rivers, which eventually join to form the Tugaloo River in Georgia. In the eastern portion of the basin, the Horsepasture and Toxaway Rivers originate in Jackson and Transylvania counties (respectively) and flow southward to South Carolina's Lake Jocassee.

The Savannah basin in North Carolina is characterized by rugged topography, with steep river gorges and elevations ranging generally from 1,500 to 4,500 feet. The basin is largely forested, with much of the land contained within the Nantahala National Forest and Game Lands, and Gorges State Park.

Composed of relatively small portions of Clay, Macon, Jackson and Transylvania counties, the basin includes urbanizing areas around the resort towns of Highlands and Cashiers, where impervious cover is much higher than one percent in localized areas. Much of the residential and resort development in the basin is concentrated along the U.S. Highway 64 corridor, which winds westward from Lake Toxaway and Sapphire to Cashiers and Highlands.

Population information summarized in the 2007 *Savannah River Basinwide Water Quality Plan* reports an estimated population in the basin of 11,500 (approximately 70 persons per square mile) in the year 2000. Population growth in the Savannah basin from 2000 to 2020 is projected to range from approximately 11 percent (Transylvania County) to 35 percent (Clay and Macon counties).

Concentrated areas of intense residential and golf course development are reported at several locations across the basin, especially in the areas

surrounding Cashiers and Highlands. Such development has the potential to threaten the relatively pristine water quality currently reported at most NC DWR sampling stations in the Savannah basin. There are currently no impaired or 303(d)-listed streams in the basin, and bio-classification scores are good to excellent at all benthic monitoring sites. Trout streams occur throughout the basin, and several streams are classified as HQW/ORW (high quality and outstanding resource waters) by the DWR. However, habitat degradation, sediment, nutrients, toxicity impacts and fecal coliform bacteria are all reported as potential stressors at several stream reaches across the basin. These water quality and aquatic habitat stressors are associated with several potential sources, including NPDES dischargers (wastewater treatment plants), land clearing, road construction, increased impervious cover, urban stormwater runoff, septic systems and riparian buffer degradation.

The Savannah River basin consists of two 8-digit Catalog Units [03060101 and 03060102] and eight 14-digit hydrologic units. Three of the eight 14-digit HUs [0306010101002, 0306010201001, and 0306010201002] have been selected as TLWs.

**CU 03060101 2011 Land Use/Land Cover Data**

| Class | Percentage |
|---|---|
| Water | 1.7 |
| Developed | 6.7 |
| Barren | 0.1 |
| Forest | 89.3 |
| Shrubland | 0.7 |
| Herbaceous | 0.3 |
| Planted/Cultivated | 1.1 |
| Wetlands | 0.1 |

**CU 03060102 2011 Land Use/Land Cover Data**

| Class | Percentage |
|---|---|
| Water | 0.1 |
| Developed | 5.1 |
| Barren | 0.3 |
| Forest | 92.3 |
| Shrubland | 0.9 |
| Herbaceous | 0.1 |
| Planted/Cultivated | 1.1 |
| Wetlands | 0.1 |

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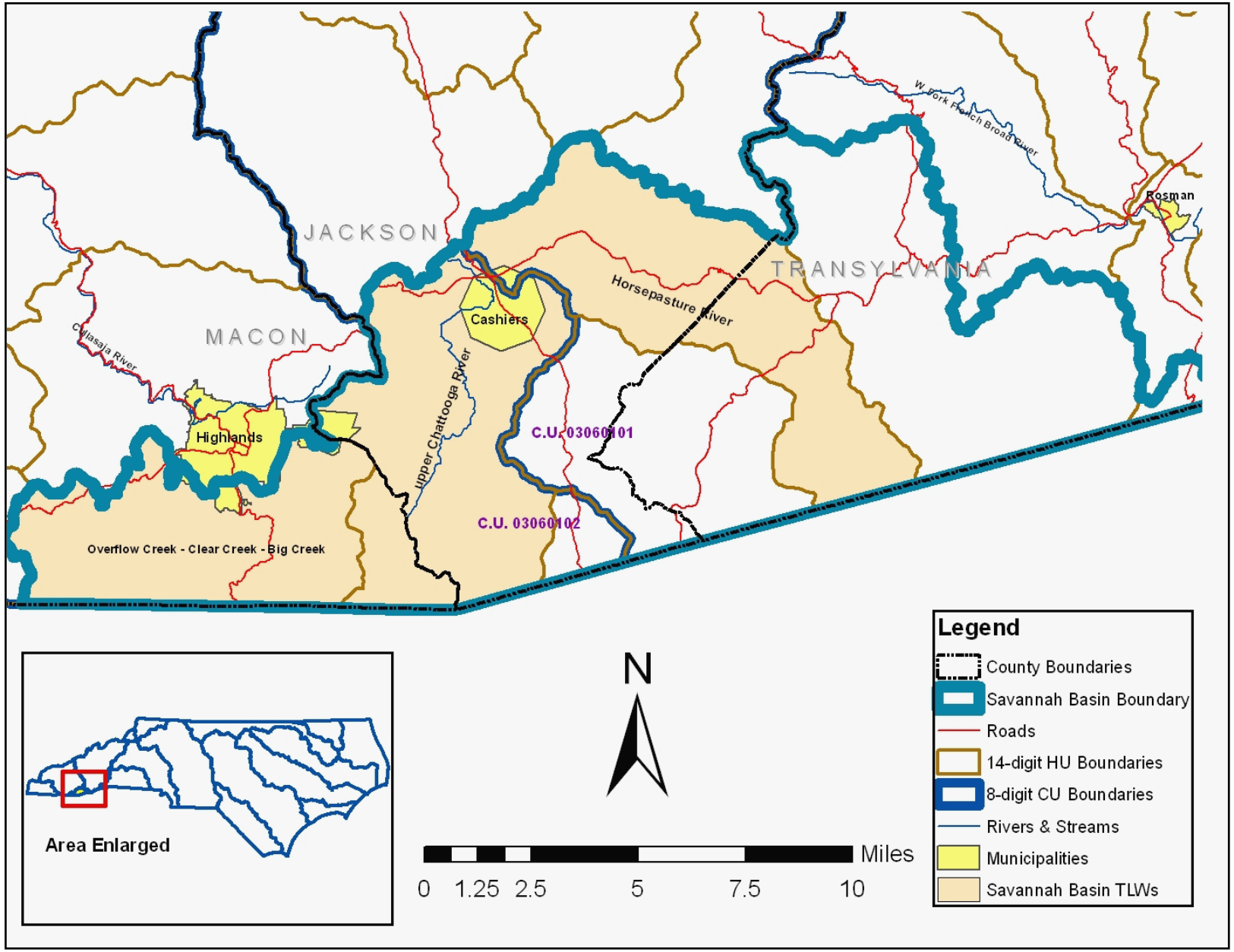
## Savannah River Basin Restoration Goals

Based on an assessment of existing watershed characteristics and resource information, DMS has developed broad restoration goals for the Savannah River Basin. The goals reflect DMS's focus on restoring, enhancing and protecting stream and wetland functions related to water quality, hydrology and habitat. They apply most directly to the three Targeted

Local Watersheds (TLWs) selected for the Savannah basin, but they also constitute important *basinwide* goals.

- Work with landowners, local resource agencies (e.g., county Soil & Water Conservation Districts), local conservation groups and local developers to protect and restore priority sites and stream reaches, especially within headwaters areas.
- Implement stream and wetland restoration projects that reduce sediment and nutrient sources through restoring riparian buffer (and wetlands) vegetation, stabilizing stream banks, restoring natural hydrology and re-establishing natural geomorphology -- especially in headwater streams within TLWs.
- Restore and protect habitat for priority aquatic species in the basin [see Chapter 5b of the NC Wildlife Resource Commission's 2005 *Wildlife Action Plan* for priority aquatic species in the Savannah basin].
- Cooperate with state and local resource groups such as the NC DWR, the NC WRC, the Jackson-Macon Conservation Alliance, the Highlands-Cashiers Land Trust and the Southwestern Commission to help leverage federal and state grant funding for local watershed conservation and protection initiatives (including stormwater BMP projects, watershed education programs, septic system and wastewater treatment plant upgrades, and preservation of priority habitat parcels).

## Savannah River Basin and Targeted Local Watersheds Map




Savannah River Basin Restoration Priorities 2008

# Table 1. Targeted Local Watershed Summary Table

| Stream Name(s) | 14-digit Hydrologic Unit | Area (sq. miles) | % Imper-vious Cover | % Agri-culture | % Forest-Wetland Area | % Non-forested Buffer | % HQW-ORW Miles | % DWR Trout Miles | % SNHA | # NHEOs | % Land in Conser-vation | # non-DMS Projects* | Contains WRC Priority Area? | # DMS Projects (fall'08) | Notes* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Horsepasture River | 03060101010020 | 33.1 | 0.7 | 2.3 | 87.0 | 21.9 | 3.2 | 86.2 | 36.7 | 152 | 28.8 | 1 | yes | 1 (Logan Creek) | 2001 TLW |
| Upper Chattooga River (incl. Norton Mill Creek) | 03060102010010 | 33.8 | 0.6 | 1.5 | 89.9 | 14.2 | 96.6 | 87.5 | 25.3 | 127 | 54.7 | 0 | yes | | |
| Overflow, Clear and Big Creeks | 03060102010020 | 25.3 | 0.2 | 3.2 | 91.8 | 14.2 | 71.7 | 79.1 | 8.2 | 83 | 68.4 | 9 | yes | | |

***2001 TLW** = targeted local watershed in 2001 *Watershed Restoration Plan*. **Non-DMS projects** = projects funded through NC CWMTF and USEPA 319 programs.
**Other acronyms**: HQW=DWR High Quality Water; ORW=DWR Outstanding Resource Water; NHEO=Natural Heritage Element Occurrence and SNHA = Significant Natural Heritage Area, as designated 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 03060101** | | | | |
| 03060101010020 | 32.47 | 20.02 | 4.45 | -- |
| **Catalog Unit 03060102** | | | | |
| 03060102010010 | 26.47 | 10.89 | -- | -- |
| 03060102010020 | 2.89 | 2.22 | -- | -- |

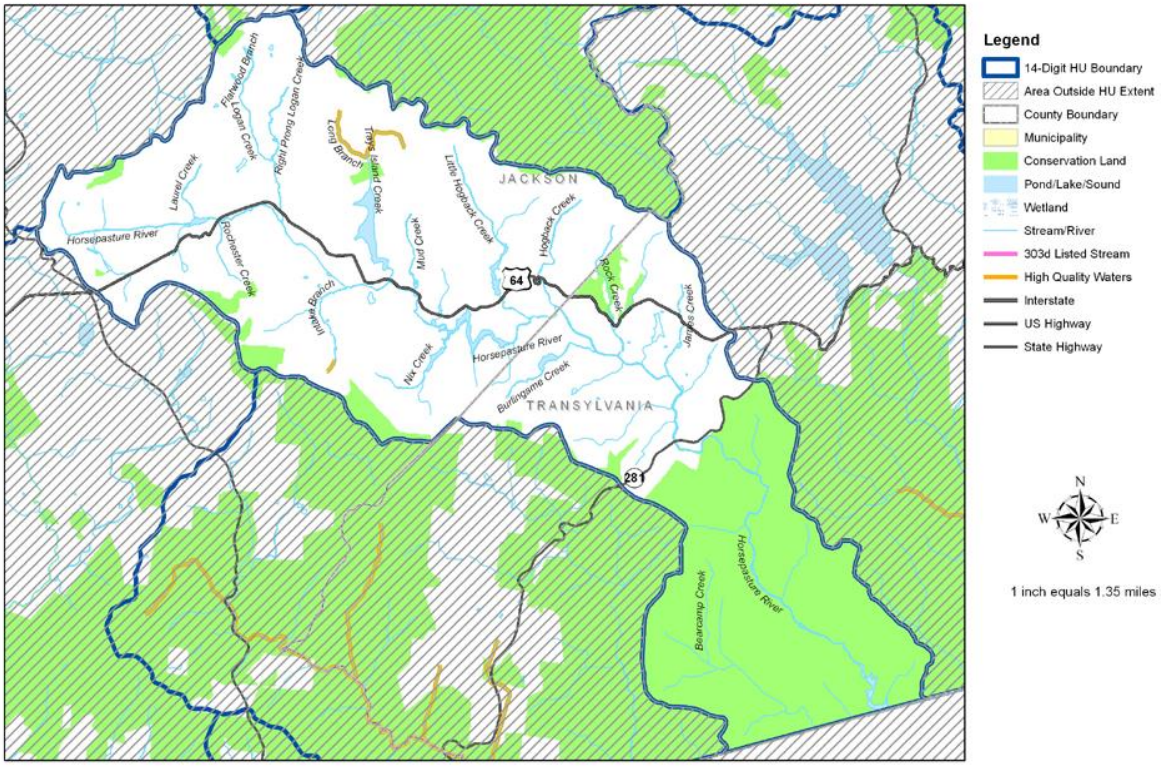
# Discussion of Targeted Local Watersheds in the Savannah River Basin

## 8-digit Catalog Unit: Savannah 03060101

Horsepasture River: 03060101 010020

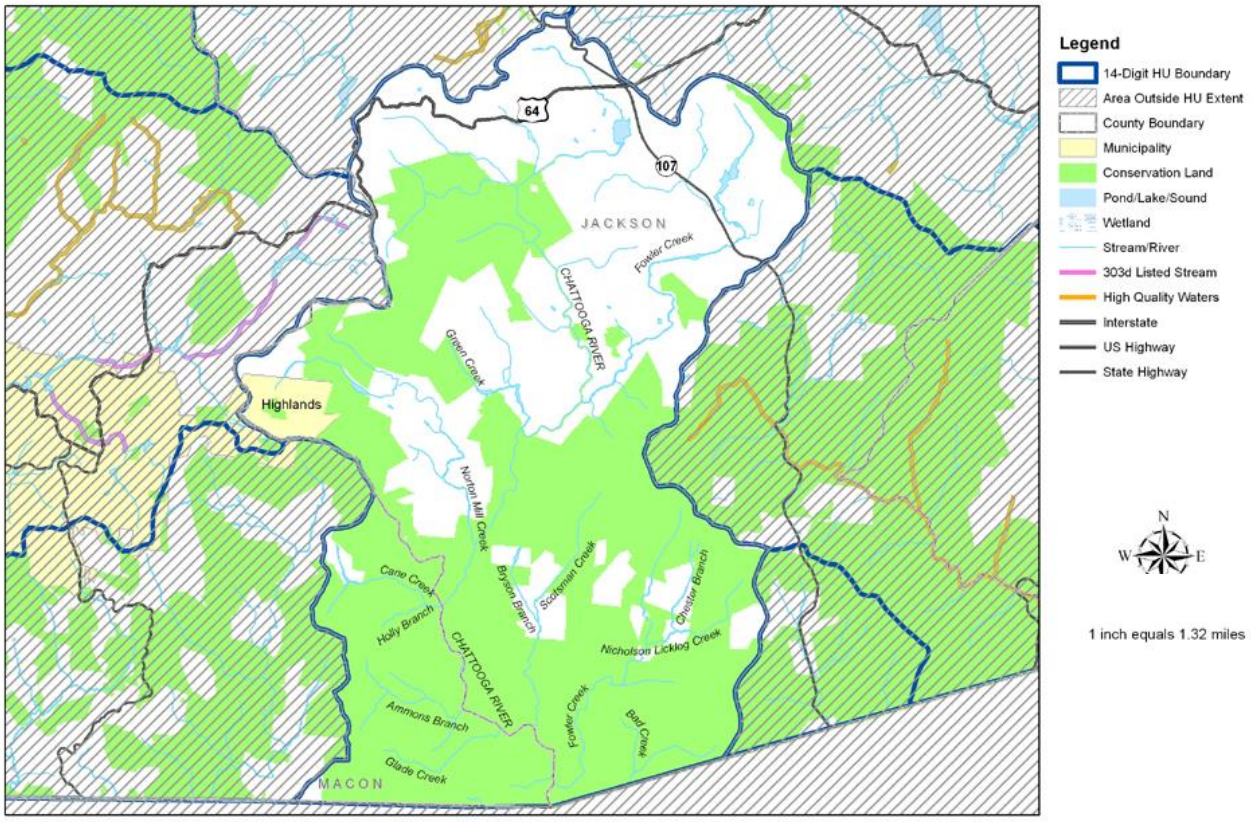
This 33-square mile watershed was the only Targeted Local Watershed selected in the original *Watershed Restoration Plan* for the Savannah River Basin (2001). The Horsepasture River flows out of southern Jackson County, including a portion of the Town of Cashiers, and through the southwestern corner of Transylvania County before entering South Carolina. Although a large portion of the watershed remains forested, increasing development from new residential areas and golf course communities (primarily for retirement and vacation homes) has the potential to degrade habitat and impair water quality. The watershed is composed almost entirely of DWR-designated Trout waters, includes a large percentage of Significant Natural Heritage Areas (SNHA), and is host to over 100 natural heritage element occurrences (rare/endangered species). Approximately 30 % of the watershed is conserved lands, and it represents a NC Wildlife Resource Commission (WRC) habitat priority area. DMS has a stream restoration project planned in this watershed (on Logan Creek). The Horsepasture River is one of only four rivers in North Carolina designated as a *National Wild and Scenic River*; it is also a state-designated *Natural and Scenic River*. In addition, due to its excellent water quality and high resource value, the lower portion of the Horsepasture River has received an Outstanding Resource Water (ORW) classification from the state's Environmental Management Commission.

## 8-digit Catalog Unit: Savannah 03060102



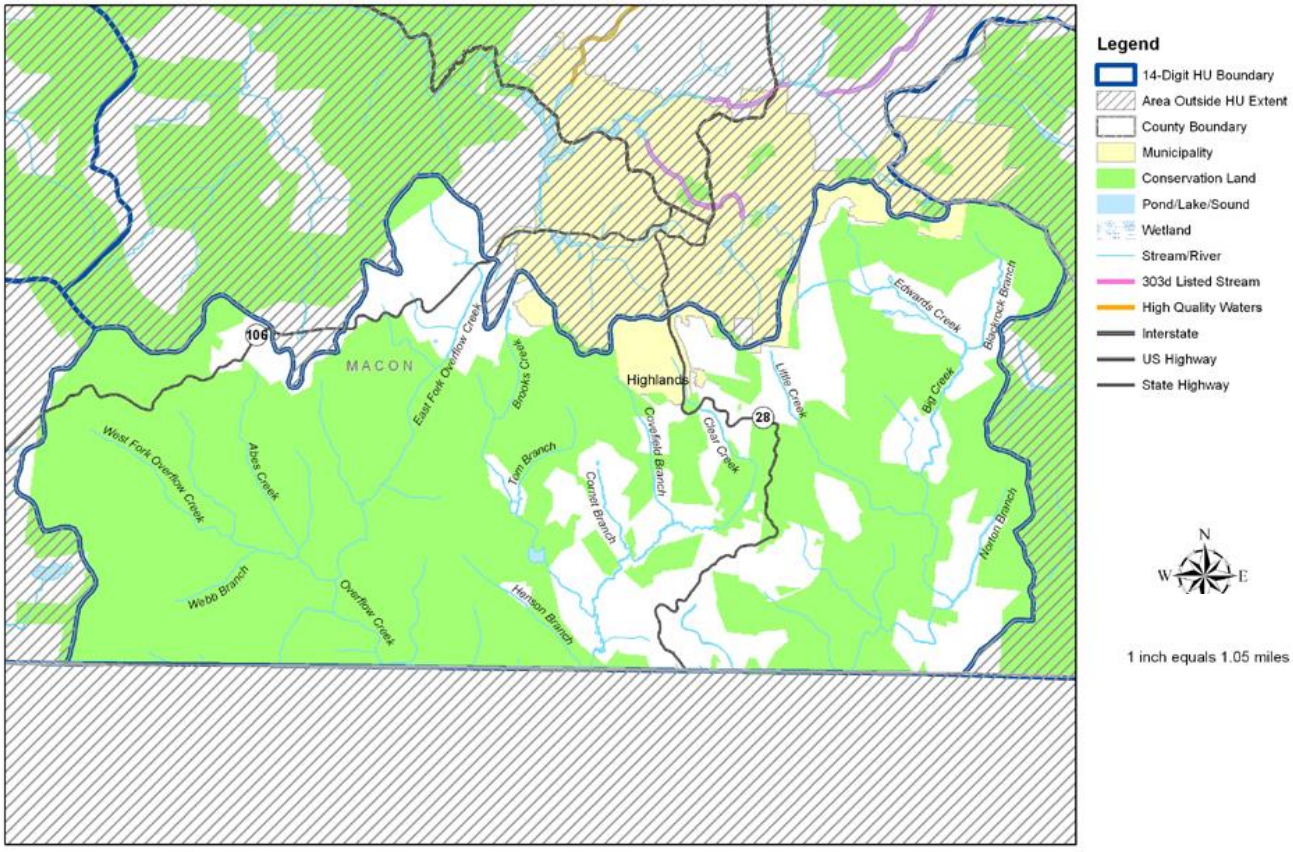
Upper Chattooga River (including Norton Mill Creek): 03060102 010010

The Chattooga River headwaters originate in the Cashiers Valley, near the resort community of Cashiers (at the intersection of NC 107 and U.S. Highway 64 in southern Jackson County). Major tributaries to the upper Chattooga -- which is state-classified ORW and Trout waters and a *National Wild and Scenic River* throughout most of its length in North Carolina -- include Fowler Creek and Norton Mill Creek. The headwaters area around Cashiers and along U.S. 64 is home to several country club and golf course communities. Although nearly 90% forested, this 34-square mile watershed is at risk from several potential stressors, including failing septic systems and stormwater runoff from increasing residential development. The 2007 *Basinwide Water Quality Plan* for the Savannah (NC DWR, 2007) identifies no impaired stream reaches within this watershed, but cites second home building (and associated land clearing, road building and riparian buffer disturbance), especially around Highlands and Cashiers, as possible sources of aquatic habitat degradation observed in the Chattooga River and Norton Mill Creek. The NC WRC's *Wildlife Action Plan* identifies the construction of numerous small ponds in the area as contributors to aquatic habitat fragmentation in small, but vital headwater streams.



Overflow Creek, Clear Creek, and Big Creek: 03060102 010020

The drainage of these three streams forms a 25-square mile watershed that is over 90% forested and contains several priority aquatic species. The headwaters originate around the Town of Highlands and Highway NC 106 in southeastern Macon County, and all three streams eventually flow southward into northern Georgia as tributaries to the Chattooga River. This watershed shares many of the same concerns as the two other targeted local watersheds selected for the Savannah basin, but with a higher percentage of protected lands (J-MCA, 2008). The Clear Creek sub-watershed has degraded or cleared riparian buffer vegetation at several reaches along Clear Creek and its tributaries (field observations by DMS staff, December 2008). Several non-DMS watershed projects have been implemented within this 14-digit HU, including 319(h)-funded initiatives related to control of erosion and sedimentation from unpaved roads in and around national forest lands.



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NC Division of Water Resources (DWR) Environmental Sciences Section. April 2005. *Savannah River Basin, Basinwide Assessment Report*.

NC Wetlands Restoration Program (NCWRP). 2001. *Watershed Restoration Plan for the Savannah River Basin.*

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Watershed Needs Assessment Team. October 2003. *Report from the Watershed Needs Assessment Team to the Mitigation Coordination Group*.

## 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

**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. 14-digit HUs are the scale at which NC DMS selects targeted local watersheds (TLWs).

**DMS** – The North Carolina Division of Mitigation Services combines existing wetlands restoration initiatives (formerly the Wetlands Restoration Program or NCWRP and the Ecosystem Enhancement Program or EEP) of the N.C. Department of Environmental Quality 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.

**NC DWR** – North Carolina Division of Water Resources

**NC WRC** – North Carolina Wildlife Resources Commission

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

**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.

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

**USGS** – United States Geological Survey

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