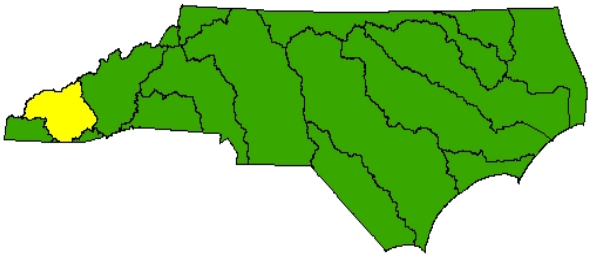
Little Tennessee
River Basin Restoration Priorities
June 2008

Ecosystem Enhancement PROGRAM



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Cover Photo: Little Tennessee River, Macon County

Introduction

This document, prepared by the North Carolina Ecosystem Enhancement Program (EEP), presents a description of Targeted Local Watersheds within the Little Tennessee River Basin. This is an update of the last Watershed Restoration Plan developed in 2002 by the Wetlands Restoration Program (NCWRP), *Watershed Restoration Plan for the Little Tennessee River Basin*.

Little Tennessee River downstream of Franklin

The 2002 plan selected nine watersheds to be targeted for stream and wetland restoration and protection and watershed planning efforts. This plan presents an additional ten Targeted Local Watersheds (Table 1).

This document draws information from the NC Division of Water Quality's (DWQ) 2007 basin plan, *Little Tennessee River Basinwide Water Quality Plan*. DWQ's plan presents detailed information on water quality, population and land use trends, recommendations to protect and improve streams and lakes, and local water quality initiatives in the basin. The present document does not repeat the information provided in DWQ's plan but provides a quick overview of EEP, names the criteria EEP used to select new Targeted Local Watersheds, and then describes the newly selected Targeted Local Watersheds.

In EEP's 2002 plan, watersheds were delineated by the NCDWQ "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.

EEP Purpose and Background

In July 2003, North Carolina committed its resources to an innovative program to restore, enhance and protect its wetlands and waterways. The Ecosystem Enhancement Program (EEP) combines the existing wetland restoration initiative (formerly the Wetlands Restoration Program) of the N.C. Department of Environment and Natural Resources (NCDENR) with efforts by the N.C. Department of Transportation (NCDOT) to offset unavoidable environmental impacts from transportation-infrastructure improvements. The U.S. Army Corps of Engineers (USACE) joined as a sponsor in the historic agreement. A Memorandum of Agreement between NCDENR, NCDOT, and USACE stipulates that EEP mitigation projects will be:

- Provided in advance of the permitted NCDOT impacts
- Designed to address functional replacement of stream, buffer and wetlands impacts
- Identified and implemented within the context of a watershed approach based on multiple scales of planning

River Basin Restoration Priorities

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.

EEP develops River Basin Restoration Priorities to guide its mitigation activities within each of the major river basins. The River Basin Restoration Priorities identify specific watersheds that exhibit both the need and opportunity for wetland and stream restoration and protection. ***These priority watersheds, or Targeted Local Watersheds, are 14-digit hydrologic units which receive priority for EEP planning and restoration/preservation project funds. The designation may also benefit local stakeholders seeking watershed improvement grants (e.g., Section 319 or Clean Water Management Trust Fund) by giving added weight to their proposals.***

Criteria for Selecting a Targeted Local Watershed

EEP evaluates a variety of GIS data and resource and planning documents on water quality and habitat conditions in each river basin to select Targeted Local Watersheds (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. Below is a summary of information used to select Targeted Local Watersheds in the Little Tennessee River Basin.

Cowee Creek

Problems: EEP evaluated DWQ use support ratings, the presence of impaired /303(d)-listed streams, and DWQ Basinwide Assessment reports to identify streams with known problems. EEP also assessed 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, EEP considered the amount of forested land, land in public or private conservation, riparian buffer condition, high quality resource waters, and natural heritage elements.

Opportunity: EEP reviewed 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 considered 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 were considered heavily in the selection of Targeted Local Watersheds. Input from the Little Tennessee Non-point Source Team was especially valuable to this effort. 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.

Little Tennessee River Basin Overview

The Little Tennessee River Basin has its uppermost headwaters in Georgia and includes most of Graham, Macon, Swain, and Jackson Counties, as well as small portions of Cherokee and Clay Counties (Figure 1). The basin encompasses a 1,797 square mile area that includes four major tributaries—the Cullasaja, Nantahala, Tuckasegee, and Cheoah Rivers. Approximately 90% of the land is forested, with less than 5% comprising urban/developed land uses concentrated in and around Franklin, Sylva, Cullowhee, Highlands, Bryson City, and Robbinsville. The population continues to grow, however, with development of forested and former agricultural land into retirement and vacation home sites. More than half of the land in the basin is in the Great Smoky Mountains National Park or the Nantahala National Forest.

The Little Tennessee River Basin contains 63 14-digit watersheds. A total of nineteen of these 14-digit watersheds are identified here as EEP's Targeted Local Watersheds. See Figures 2, 3, and 4 for maps of the TLWs and Table 1 for a list of TLWs and selected characteristics.

Little Tennessee Restoration Goals

Based on an assessment of existing watershed characteristics and resource information, EEP has developed broad restoration goals for the Little Tennessee River Basin. 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. EEP's restoration goals for the Little Tennessee River Basin are listed below.

Unstable stream channel on Savannah 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 rare, threatened and endangered species (especially the federally listed spotfin chub, Appalacian elktoe, and littlewing pearlymussel), and sensitive species such as native brook trout.

- Develop a local watershed plan in the Little Tennessee River Basin to identify and address stream impacts through a local stakeholder process. This plan will begin in summer 2008 and work to identify specific wetland and stream restoration projects as well as preservation and best management practice strategies.
- Cooperate with the Little Tennessee Non-point Source Team 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.

Table 1. 2008 Targeted Local Watersheds for the Little Tennessee River Basin

14-digit Hydrologic Unit	Major Streams	Area (sq mi)	% Imper-vious Cover	Land Cover: % Agriculture	Stream Miles on draft 2008 303d List	Contains WRC Priority Area	WSW Stream Miles	HQW Stream Miles	# of NHEOs	% of Land in Con-servation	% of Streams with Forested Buffer	Land Cover: % Forest & Wetland	Notes*
Central Little Tennessee River basin (LT02): Little Tennessee River and tributaries to Lake Fontana dam													
06010202020010	Upper Little Tennessee R/ Middle Cr	34	0.3	8	4 mi of L. Tenn R.	yes	0	0	40	43	74	87	2002 TLW
06010202020020	Coweeta/ Tessentee Cr	58	0.4	13	0	yes	0	0	67	36	65	81	
06010202020030	Cartoogechaye Cr	59	0.7	11	0	yes	101	0	41	44	68	82	
06010202030010	Upper Cullasaja R	34	1.2	3	8 mi of Mill Cr & Cullasaja R	yes	23	0	121	49	64	81	2002 TLW
06010202030020	Lower Cullasaja R	39	0.6	7	0	yes	0	0	53	31	69	86	
06010202040010	Rabbitt/Watauga Cr	25	1.3	19	0	yes	0	0	26	6	44	69	LWP
06010202040020	Iotla/Crawford/ upper Burningtown Cr	40	1.0	13	0	yes	0	0	20	40	62	79	LWP; 2002 TLW
06010202040030	Cowee Cr	38	0.2	9	0	yes	0	0	46	29	77	87	LWP
06010202040040	Tellico/lower Burningtown Cr	24	0.1	7	0	yes	0	0	53	44	80	89	LWP
06010202060010	Brush/Rattlesnake Cr	27	0.1	3	0	yes	0	0	164	32	79	92	LWP
Eastern Little Tennessee River basin (LT03): Tuckasegee River and tributaries											0		
06010203010060	Caney Fk	51	0.1	3	0	yes	71	18	128	66	83	95	
06010203010070	Cullowhee Cr	23	0.6	6	0	yes	0	2	26	26	72	89	2002 TLW
06010203020010	Lower Scott Cr	17	3.6	12	0	yes	0	0	21	1	44	69	2002 TLW
06010203020020	Upper Scott Cr	51	0.6	4	0	yes	4	0	60	40	77	89	
06010203020030	Savannah Cr	41	0.4	6	0	yes	0	0	3	27	73	89	2002 TLW
06010203030080	Soco Cr	45	0.7	4	0	yes	2	0	42	5	76	89	2002 TLW
Western Little Tennessee River basin (LT04): Little Tennessee River and tributaries downstream of Lake Fontana dam											0		
06010204010010	Tulula Cr	30	0.9	4	0	no	115	0	10	53	82	89	
06010204010020	Sweetwater Cr	14	0.3	5	0	no	50	0	1	22	79	91	2002 TLW
06010204010030	Long/Atoah Cr	12	1.1	5	0	no	3	13	2	47	81	90	2002 TLW

*2002 TLW=targeted local watershed in 2002 plan; LWP=watershed is subject of an EEP local watershed plan to begin in 2008
Other table acronyms: WRC=NC Wildlife Resource Commission; WSW=DWQ Water Supply Watershed; HQW=DWQ High Quality Water; NHEO=Natural Heritage Element Occurrence, as maintained by the NC Natural Heritage Program

Figure 1. Little Tennessee River basin.

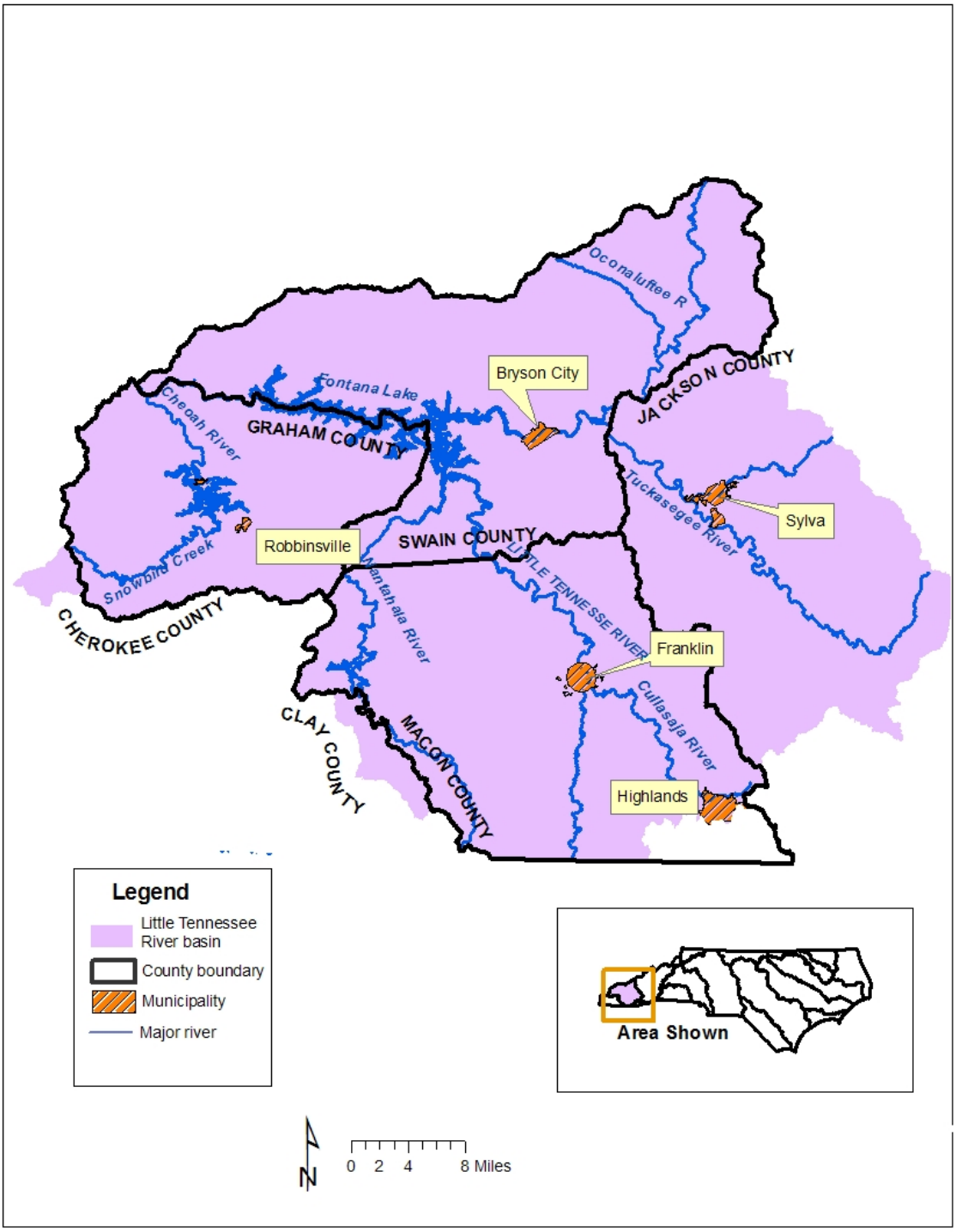


Figure 2. Targeted local watersheds in the eastern Little Tennessee River basin.

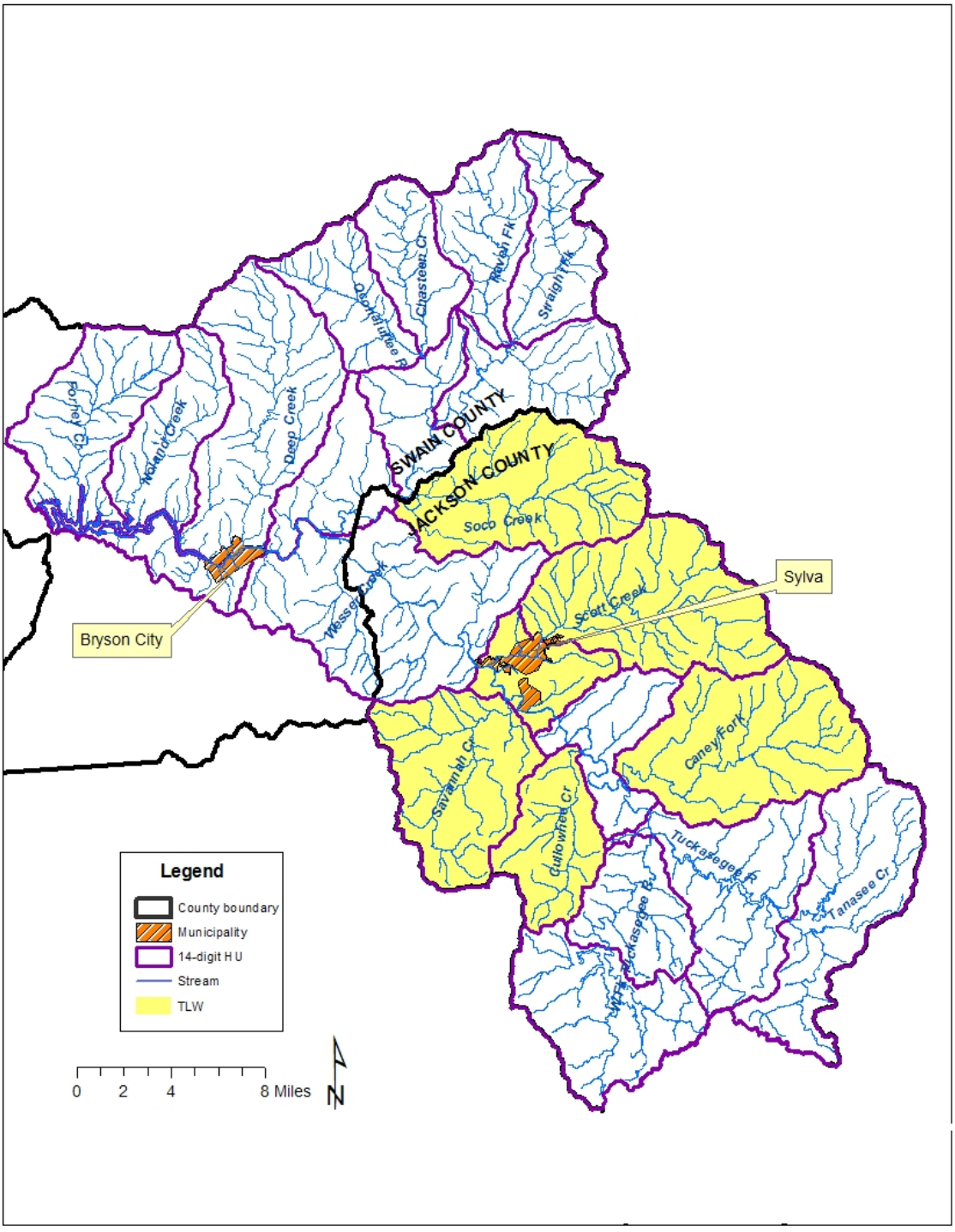


Figure 3. Targeted local watersheds in the central Little Tennessee River basin.

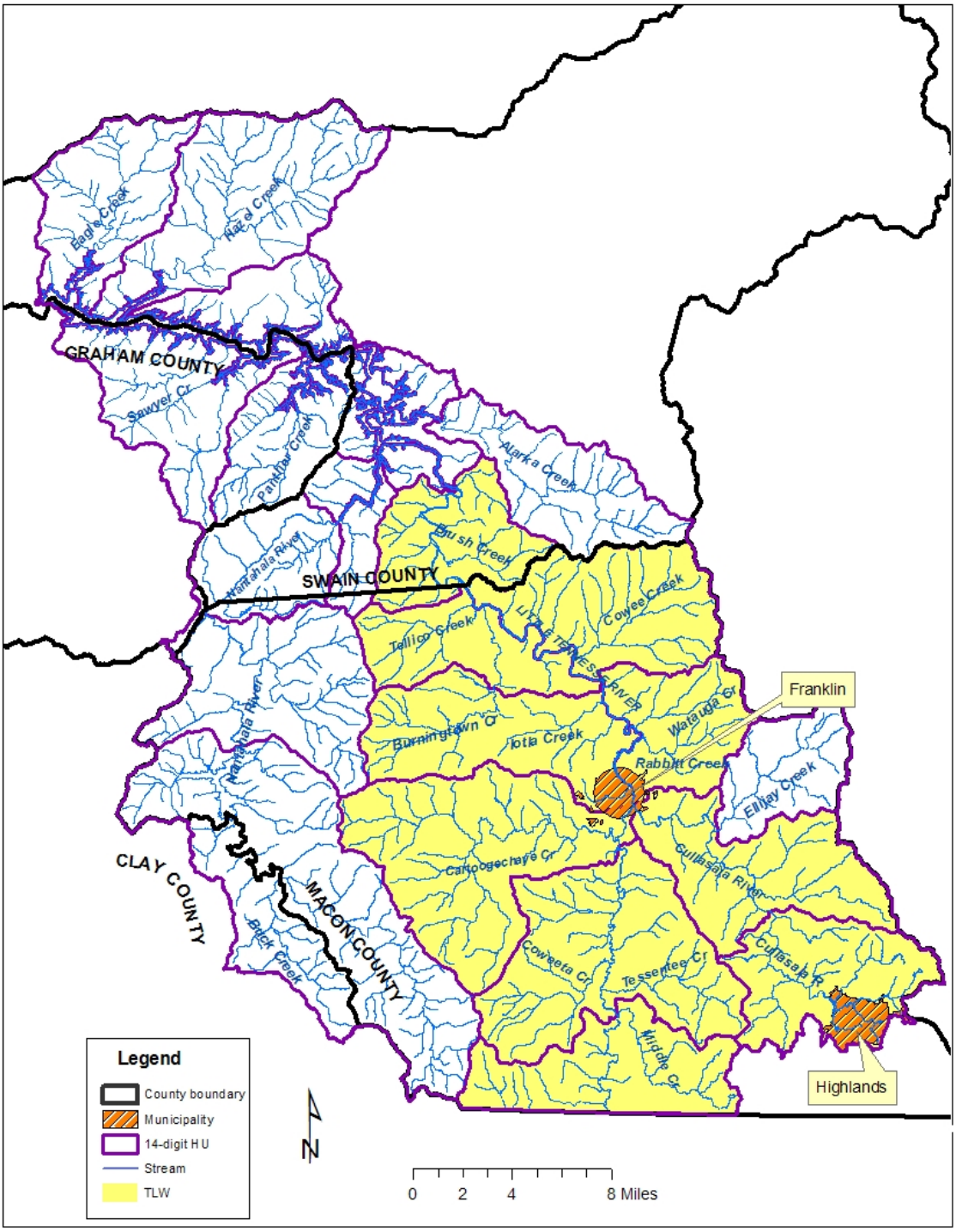
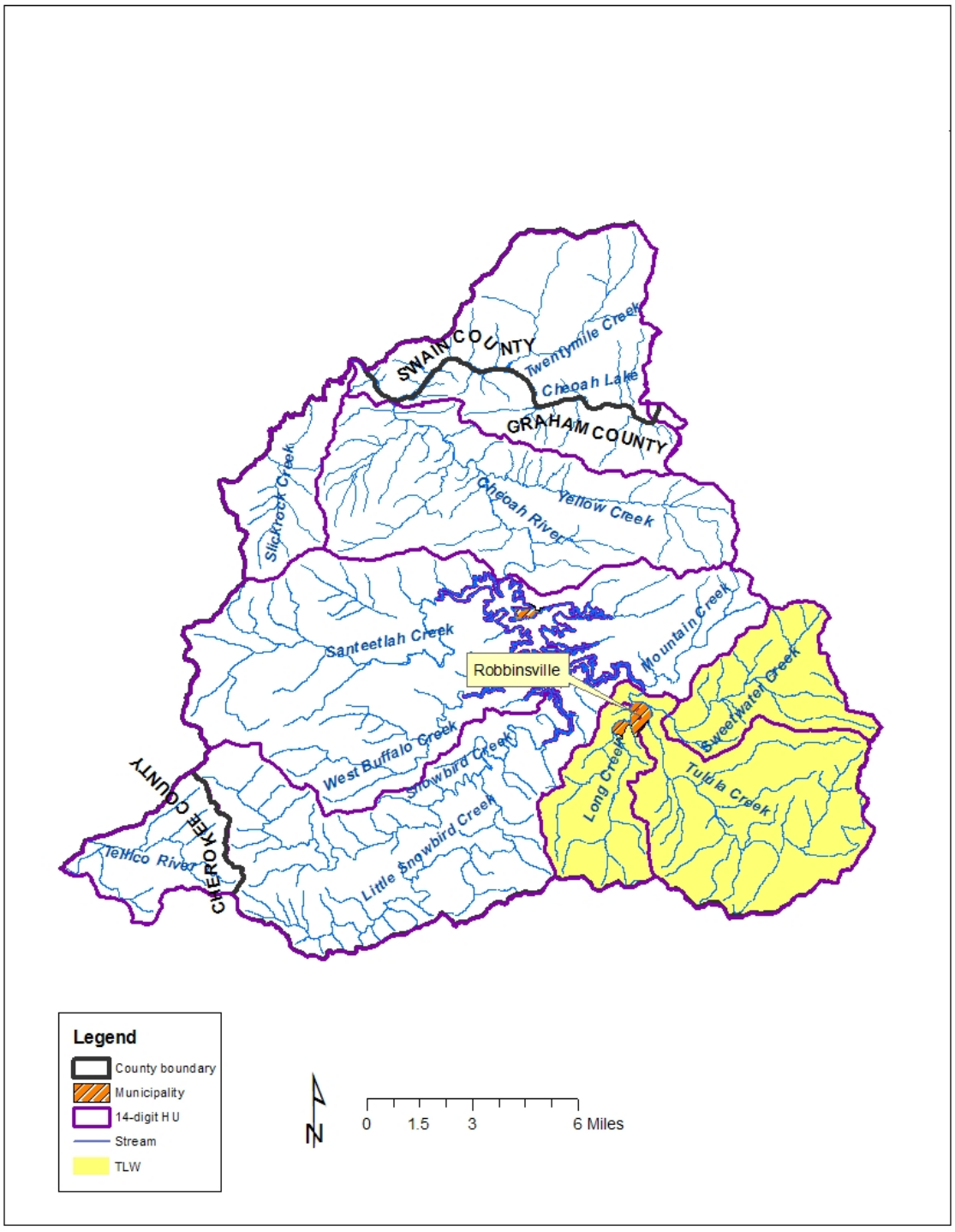


Figure 4. Targeted local watersheds in the western Little Tennessee River basin.



Summary of Targeted Local Watersheds

Central Little Tennessee River Basin: Little Tennessee River and Tributaries to Lake Fontana Dam

Upper Little Tennessee River/Middle Creek: 06010202020010
This 14-digit HU contains the Little Tennessee River just downstream of Georgia. Four miles of the Little Tennessee River are impaired and on the 2008 draft 303(d) list primarily due to impacts from a wastewater treatment plant in upstream Georgia; currently, this plant is not operating, so improvements in biological communities may result in removal from the 303(d) list. Sediment impacts to aquatic habitat in both the Little Tennessee River and Middle Creek are also significant, however. As 87% of the land in the watershed is forested, and more than half of this is privately owned, preservation opportunities are apparent. Middle Creek Falls and aquatic habitat in the upper Little Tennessee River are Significant Natural Heritage Areas.

Coweeta/Tessentee Cr: 06010202020020
Thirty-five percent of the stream length in this watershed has inadequate forested buffer, and streams are impacted by past and present agricultural activities. The Coweeta Hydrologic Laboratory is in this watershed, and several land protection and stream/wetland restoration projects have been or will be implemented. The aquatic habitat in the upper Little Tennessee River here is a Significant Natural Heritage Area.

Cartoogechaye Cr: 06010202020030
This watershed is the source of Franklin's drinking water and has been the focus of a recent riparian area study by the Little Tennessee Watershed Association. This watershed is an excellent area for both restoration and preservation efforts. Much of Cartoogechaye Creek runs through a wide floodplain in residential and agricultural land, and 32% of its stream length has inadequate riparian buffer. A majority of this watershed is forested, with half of this in private land. The aquatic habitat in the section of the upper Little Tennessee River in this watershed is a Significant Natural Heritage Area.

Upper Cullasaja R: 06010202030010
The upper Cullasaja River watershed has two impaired streams on the 303(d) list—the upper Cullasaja River and Mill Creek. Although only 1% of the watershed is impervious, much of this is concentrated in the Town of Highlands. The Upper Cullasaja Watershed Association has developed a Watershed Strategy and Action Plan for the upper Cullasaja Watershed, and the Town of Highlands has received funding to develop a stormwater management plan. The Cullasaja River Gorge is a Significant Natural Heritage Area.

Lower Cullasaja R: 06010202030020
The lower Cullasaja River watershed is mostly forested, but a large majority of land is privately owned. Once it exits the gorge, the Cullasaja River mainstem flows through a large floodplain where riparian buffer is limited. Water and habitat quality issues have been documented in the Cullasaja River and a number of its tributaries.

Rabbitt/Watauga Cr: 06010202040010
Cat, Rabbitt, and Watauga Creeks have limited in-stream habitat, suffering from sedimentation and lack of riparian buffer (56% of stream length has inadequate riparian buffer). This watershed includes the eastern part of Franklin and has a mix of land uses, with a relatively large area in residential and agricultural land. Aquatic habitat in the Little Tennessee River that is on the western edge of this watershed is a Significant Natural Heritage Area. This watershed is one of five targeted local watersheds that will be the focus of a larger EEP local watershed planning effort to begin in summer 2008.

Iotla/Crawford/ upper Burningtown Cr: 06010202040020
Iotla Creek suffers from degraded habitat and nutrient enrichment, while Crawford Branch, which drains the Town of Franklin, is highly impacted by poor water quality, stormwater flows, and poor habitat. Both of these streams and their tributaries have limited riparian buffer and have been channelized in the past. This area has a mix of residential, agricultural, and forested land uses. Aquatic habitat in the Little Tennessee River that is on the eastern edge of this watershed is a Significant Natural Heritage Area. This watershed is one of five targeted local watersheds that will be the focus of a larger EEP local watershed planning effort to begin in summer 2008.

Cowee Creek: 06010202040030
The Cowee area is characterized by a rich ecological community and significant cultural heritage. Its valleys are farmed and much of its forested uplands (forest consists of 87% of the land cover) are privately owned. It has both restoration and protection opportunities, and it has been the focus of local conservation efforts by the Land Trust for the Little Tennessee and the Little Tennessee Watershed Association. Both the aquatic habitat and the floodplain of the Little Tennessee River that are on the western edge of this watershed are Significant Natural Heritage Areas. This watershed is one of five targeted local watersheds that will be the focus of a larger EEP local watershed planning effort to begin in summer 2008.

Tellico/Lower Burningtown Cr: 06010202040040
Almost 90% of this watershed is forested, and 80% of its stream length is adequately buffered. Much of lower Burningtown Creek has been in cattle pasture; however, there is a slow conversion of this farmland into residential land. Both the aquatic habitat and the floodplain of the Little Tennessee River that are on the eastern edge of this watershed are Significant Natural Heritage Areas. This watershed is one of five targeted local watersheds that will be the focus of a larger EEP local watershed planning effort to begin in summer 2008.

Brush/Rattlesnake Cr: 06010202060010
Like the Tellico/Lower Burningtown Creek watershed, a large majority (92%) of this watershed is forested and almost 80% of its stream length is adequately buffered. Brush Creek hosts the largest observed fall populations of the federally threatened spotfin chub. Both the aquatic habitat and the floodplain of the Little Tennessee River that run through the center of this watershed are Significant Natural Heritage Areas. This watershed is one of five targeted local watersheds that will be the focus of a larger EEP local watershed planning effort to begin in summer 2008.

Eastern Little Tennessee River Basin: Tuckasegee River and Tributaries

Caney Fk: 06010203010060
Much of this watershed is in the Nantahala National Forest, and 95% of this watershed is forested. Lower Caney Fork flows through a large floodplain that is a patchwork of agricultural and residential uses.

Cullowhee Creek: 06010203010070
This watershed drains the campus of Western Carolina University (WCU), which is the site of a large stream restoration project. WCU is also embarking upon a long-term study of watershed streams. This watershed will experience continued development with expansion of college facilities and housing. A number of its lower gradient streams flow through larger agricultural floodplains and are in need of restoration.

Lower Scott Cr: 06010203020010
Scott Creek is on the 2008 draft 303(d) list for high fecal coliform bacteria counts; high turbidity levels have also been documented. Lower Scott Creek flows through Sylva and its watershed has the highest percentage of impervious cover (4%) of any targeted local watershed in the Little Tennessee River basin. Only 44% of the stream length in this watershed is adequately buffered. The Watershed Association of the Tuckasegee River has been monitoring water quality and working with the community to develop strategies to address turbidity and fecal coliform bacteria issues.

Upper Scott Cr: 06010203020020
Scott Creek is on the 2008 draft 303(d) list for high fecal coliform bacteria counts; high turbidity levels have also been documented. The upper watershed of Scott Creek watershed is characterized by more forested land and well-buffered streams than its downstream watershed. The Watershed Association of the Tuckasegee River has been monitoring water quality and working with the community to develop strategies to address turbidity and fecal coliform bacteria issues.

Savannah Cr: 06010203020030
Savannah Creek is on the 2008 draft 303(d) list of impaired waters for high fecal coliform bacteria counts; high turbidity levels have been documented throughout the watershed. Stream bank erosion is problematic in many streams in the watershed, and streams suffer from excess sediment. The Watershed Association of the Tuckasegee River is sampling water quality in the watershed and developing a Watershed Action Plan for Greens Creek, a major tributary.

Soco Cr: 06010203030080
Much of the Soco Creek watershed is within the Qualla boundary of the Eastern Band of Cherokee Indians (EBCI). Soco Falls, a Significant Natural Heritage Area, lies within the headwaters of Soco Creek. Eighty-nine percent of this watershed is forested, but US 19 parallels much of Soco Creek as it flows towards Cherokee, and the stream is impacted by runoff from the road and development along it. Stream restoration has occurred along Soco Creek, and the EBCI is pursuing watershed restoration activities on its lands such as stormwater management and stream restoration.

Western Little Tennessee River Basin: Little Tennessee River and Tributaries Downstream of Lake Fontana Dam

Three Targeted Local Watersheds were chosen within this portion of the Little Tennessee River basin—Tulula Cr. (06010204010010), Sweetwater Cr. (06010204010020), and Long/Atoah Cr. (06010204010030). These watersheds are clustered in the southeastern part of Graham County near Robbinsville and are characterized by forested headwaters. All three watersheds serve as water supplies for the Town of Robbinsville. Tulula Bog, a Significant Natural Heritage Area, is located on upper Tulula Creek.

The lower portions of Tulula, Long, Atoah, and Sweetwater Creeks flow through a mix of agricultural and residential land. Streams have documented stream bank erosion, habitat degradation, and nutrient problems, and the Graham County Soil and Water Conservation District has been working with landowners to install best management practices.

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