

State Specific Technical Service Provider (TSP) Training Module for Tennessee



Index

- Purpose of Module
- What this Module is Not...
- What is the purpose of the Natural Resources Conservation Service (NRCS)?
- NRCS Mission and Vision
- Tennessee NRCS Organizational structure
- General Overview of Tennessee characteristics
- What are Natural Resources (SWAPAE+H)?
- Review of FOTG and TN FOTG Requirements
- Review of State Laws and Permits

Index (cont.)

- What is a Conservation Plan?
- Planning Considerations
- TN Ecological Science and Planning Team
- Engineering
- Top 10 must implemented Conservation Practices in TN
- Expected TSP workflow
- Additional Reference and Training Opportunities
- Certificate of Completion

Purpose of this Module

This module will provide an overview and some general information that Technical Service Providers (TSPs) will need to conduct conservation planning in Tennessee. This information is general in nature so the TSP may need to follow up with additional reading or training to make sure they have the knowledge, skills, licenses and certifications to conduct conservation planning in Tennessee.

What this Module is Not...

- Remember, NRCS planning criteria and assessment tools remain the standard to determine treatment of a resource concern.
- Not all NRCS policies and Federal Laws & Regulations are covered in this module.
- Additional study and training will be needed to adequately service the local conservation needs of the diverse range of private lands decision-makers involved in agricultural and forestry activities in Tennessee.

What is the Purpose of the Natural Resources Conservation Service?



NRCS is USDA's technical agency for providing assistance to private land managers, conservation districts, tribes, and other organizations in planning and carrying out conservation activities and programs

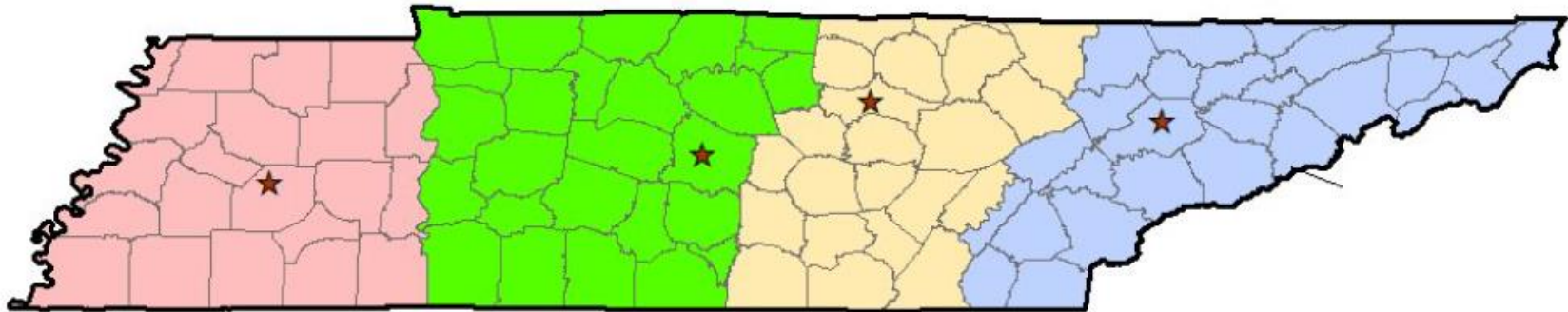
Our Mission: We deliver conservation solutions so agricultural producers can protect natural resources and feed a growing world.



Our Vision: A world of clean and abundant water, healthy soils, resilient landscapes, and thriving agricultural communities through voluntary conservation.



Tennessee NRCS Administrative Areas



95 Diverse Counties
72 USDA Service Centers



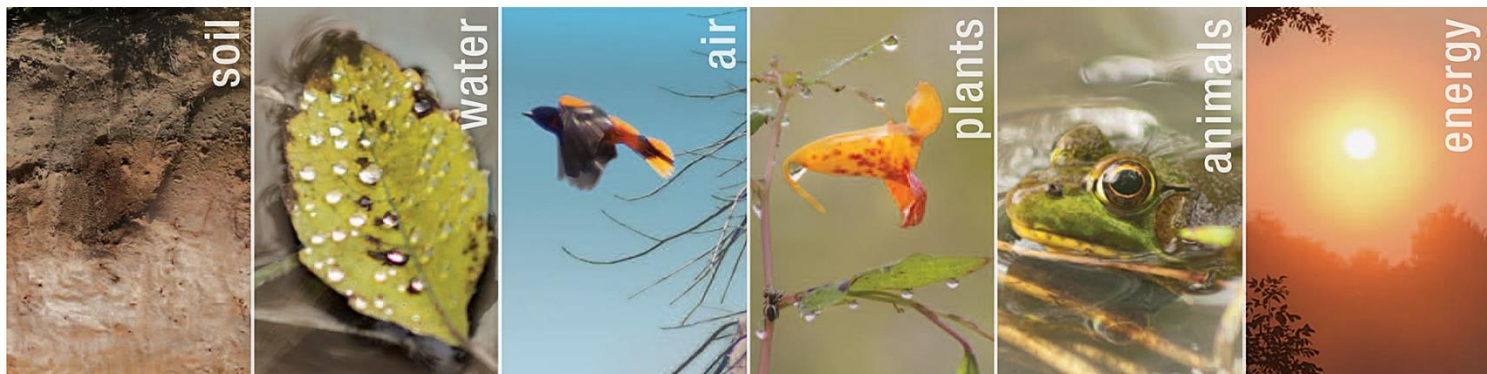
TN NRCS Personnel Directory (March 2023)

<https://www.nrcs.usda.gov/sites/default/files/2023-03/Tennessee%20Personnel%20Directory%20March%202023.pdf>

Review of Major Land Ownership

- Approximately 90% of the state is private lands
- Federal lands make up about 4% of TN
- State owned lands make up about 6% of TN

Conservation actions and efforts on private lands are critical to the State landscape.



Review of Major Land Uses

As of the 2017 Ag Census, there were 69,983 farms in Tennessee. Those farms accounted for 10,874,238 acres of land in farms (40% of the state's surface area).

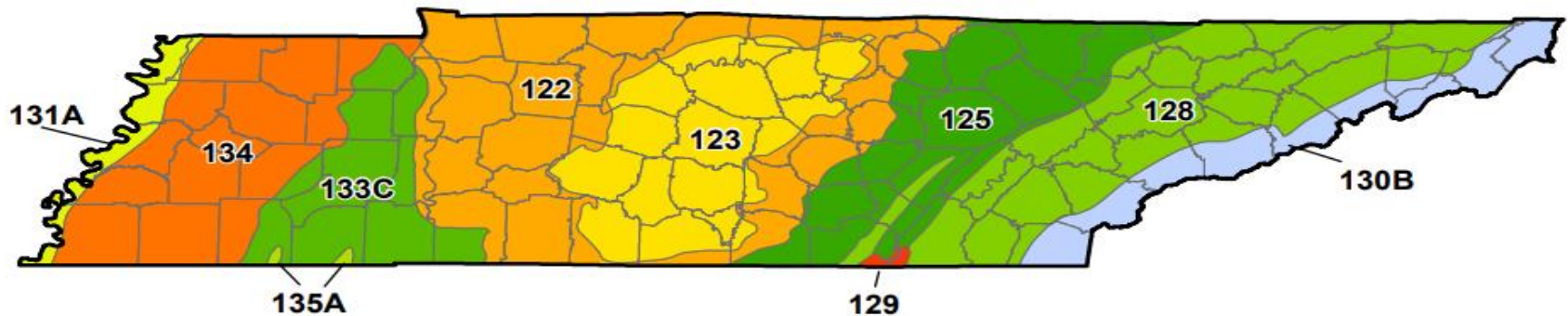
Tennessee is roughly 44% forestland, 18% cropland, and 15% pastureland, 12% developed land, and ~11% of other designations.











Between the 1992 and 2017, Tennessee saw substantial land use change on private lands. The largest land use change on non-federal rural land was conversion from pasture to cropland (1,040,100 acres), and other large shifts included cropland to pasture (756,100 acres), pasture to forest (596,700 acres), forest to pasture (274,300 acres), cropland to forest (220,100 acres), and CRP to cropland (240,700 acres).

General Tennessee Soil Information

- Variations in geology, topography, climate, vegetation across the state of Tennessee drastically influence the use and management of soil resources.
- [Web Soil Survey](#) – Public source for soil maps, interpretations, and reports
- 444 Soil Series are mapped across the state
- [Dickson Soil Series](#) is the State Soil
- The most extensively mapped soil series are:
 - Bodine
 - Lily
 - Fullerton
 - Gilpin
 - Sengtown
 - Biffle
 - Smithdale
 - Talbott
 - Loring
 - Hawthorne

Major Land Resource Areas of Tennessee



Major Land Resource Area - Names and Symbols	
	Alabama and Mississippi Blackland Prairie, 135A
	Cumberland Plateau and Mountains, 125
	Gulf Coastal Plain, 133C
	Highland Rim and Pennyroyal, 122
	Nashville Basin, 123
	Sand Mountain, 129
	Southern Appalachian Ridges and Valleys, 128
	Southern Blue Ridge, 130B
	Southern Mississippi River Alluvium, 131A
	Southern Mississippi Valley Loess, 134

Basic Soil Property of West TN

- West (MLRA 131A/134/133C)
 - Fertile soils that are among the youngest in the state.
 - Derived from recent to ancient coastal plain and loess deposits.
 - Average annual temperatures range in the low 60s
 - Long growing season due to warm temperatures

 - MLRA 131A (Lowest elevation 200 feet)
 - » Nearly level, loamy alluvium soils
 - » Predominantly in cultivated crops where ground water table conditions are suitable (drained/undrained).
 - MLRA 134
 - » Highly erodible loess hills consisting of silty soils
 - » Fragipan restrictive layers are common
 - » Cropped on level ground and with woody vegetation on steep eroded side slopes.
 - MRLA 133C
 - » Gently rolling infertile loamy to clayey ancient coastal plain sediment soils
 - » Most soils are moderate to well drained
 - » Predominantly forested with cultivated crops on floodplains and terrace along streams and rivers

Basic Soil Properties of Central TN

- Central (MLRA 122 & 123)
 - Fertile residual sedimentary soils that are clayey.
 - Many soils have restrictive layers consisting of fragipans or bedrock
 - Sinkholes are a common occurrence in both MLRAs

 - MLRA 122
 - » Rolling to steep landforms consisting of silty and clayey soils formed predominantly from limestone, chert and shale.
 - » Hills on the western edge of the MLRA are commonly capped with thin loess deposits.
 - » Vegetation consists of cropland on level floodplains and terraces, pasture on hills with hardwood forest on steep hillsides.

 - MLRA 123
 - » Area is underlain by phosphatic limestone and outcrops of limestone are present in higher hills.
 - » Vegetation consists of cropland on level floodplains and terraces, pasture on hills with hardwood forest on steep hillsides.

Basic Soil Properties of East TN

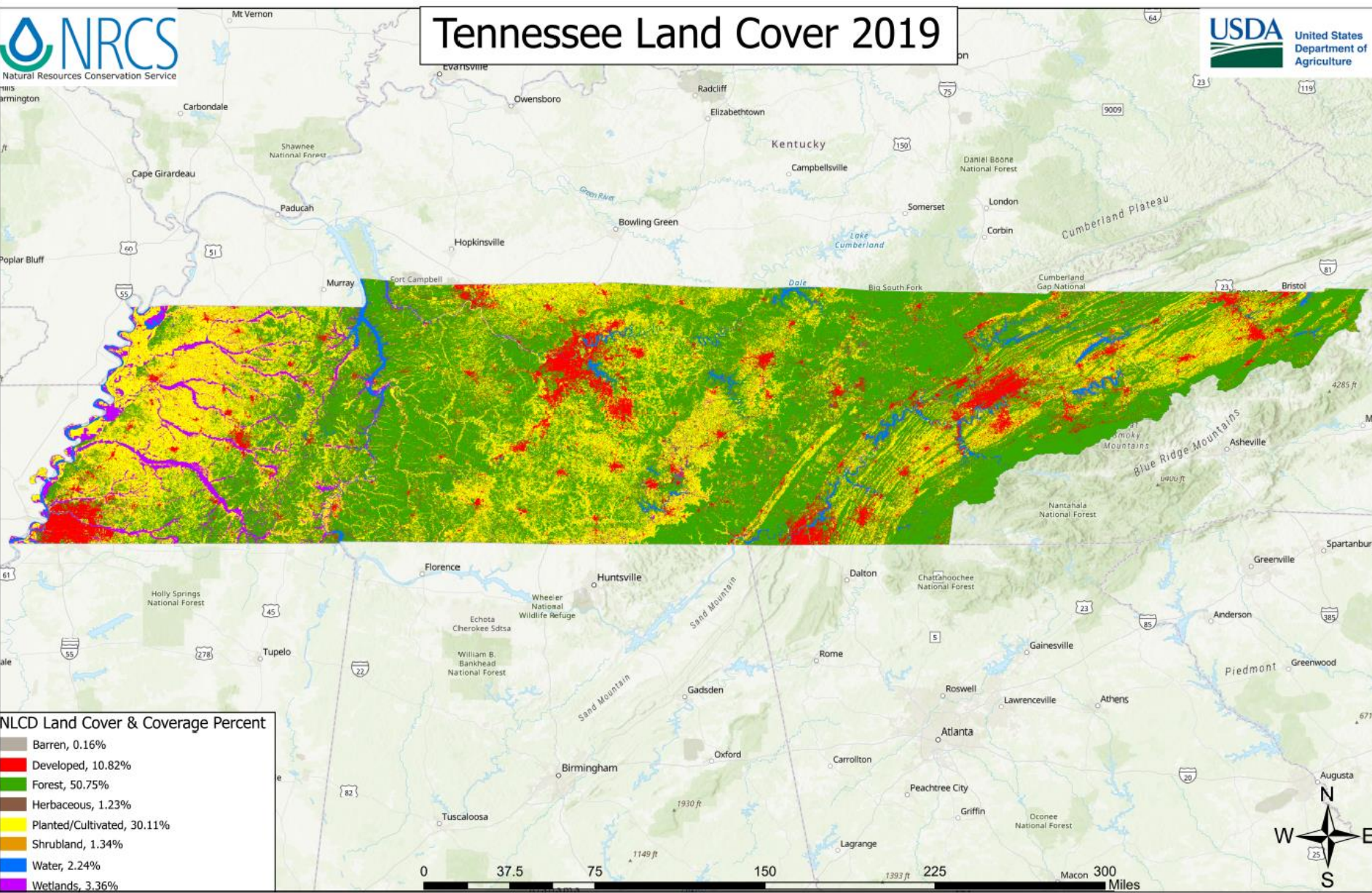
- East (MLRAs 125/128/130B)
 - This region has the highest elevations and coolest temperature
 - Organic matter tends to accumulate on the surface due to the cool/wet climate. This creates dark soil surface horizons.

 - MLRA 125
 - » Rolling hills of loamy soils underlain by horizontal deposits of sandstones and shales bedrock
 - » Many soils are moderately deep to bedrock and are well drained with limited fertility
 - » Cool temperatures limit cropability which shifts vegetation toward mixed hardwood forest and pasture.

 - MLRA 128
 - » Steep to very steep slopes loamy soils derived from dipping and striking sedimentary bedrock (sandstone, hard shale, chert, and dolomitic limestone). Loamy valleys underlain with soft shale and clayey limestone.
 - » Sinkholes are prevalent
 - » Vegetation consists primarily of pasture and mixed hardwood forests

 - MLRA 130B (Highest elevation 6,642 feet)
 - » Steep to very steep terrain consisting of loamy soils derived from igneous and metamorphic bedrock (phyllite, slate, quartzite, granite, and gneiss)
 - » Loamy soils with rock fragments on and throughout the soil profile
 - » Valleys have deep, well drained, loamy, productive soils
 - » Soil depth to bedrock ranges from deep to shallow with numerous rock outcrops
 - » Growing season is short due to cold temperatures. Consists of mostly hardwood forest

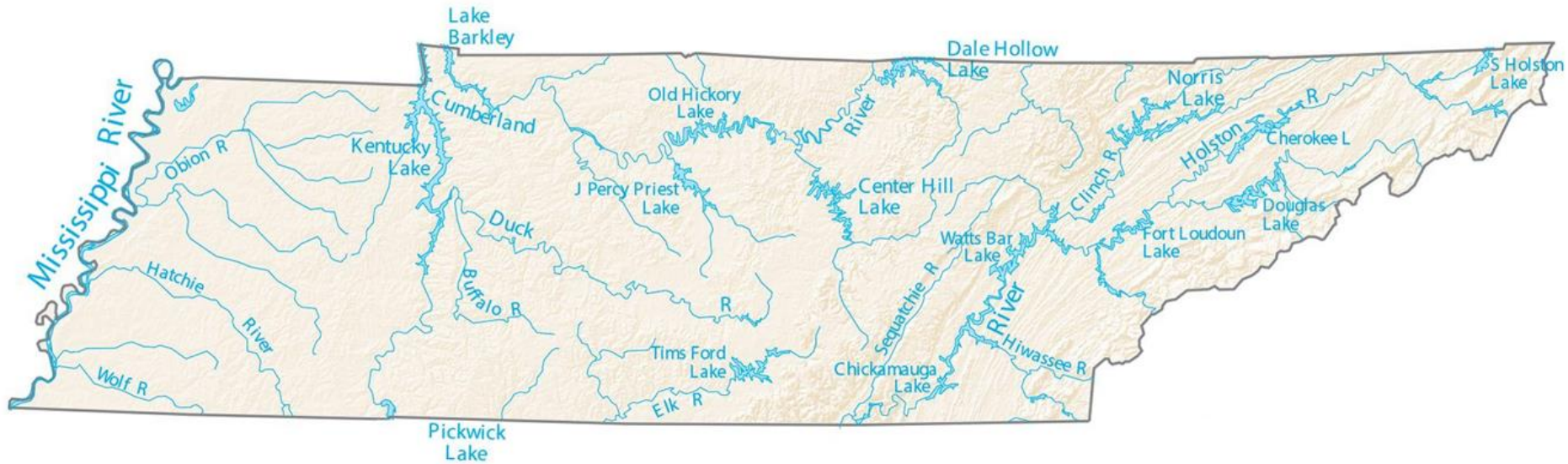
Tennessee Land Cover 2019



NLCD Land Cover & Coverage Percent

Barren	0.16%
Developed	10.82%
Forest	50.75%
Herbaceous	1.23%
Planted/Cultivated	30.11%
Shrubland	1.34%
Water	2.24%
Wetlands	3.36%

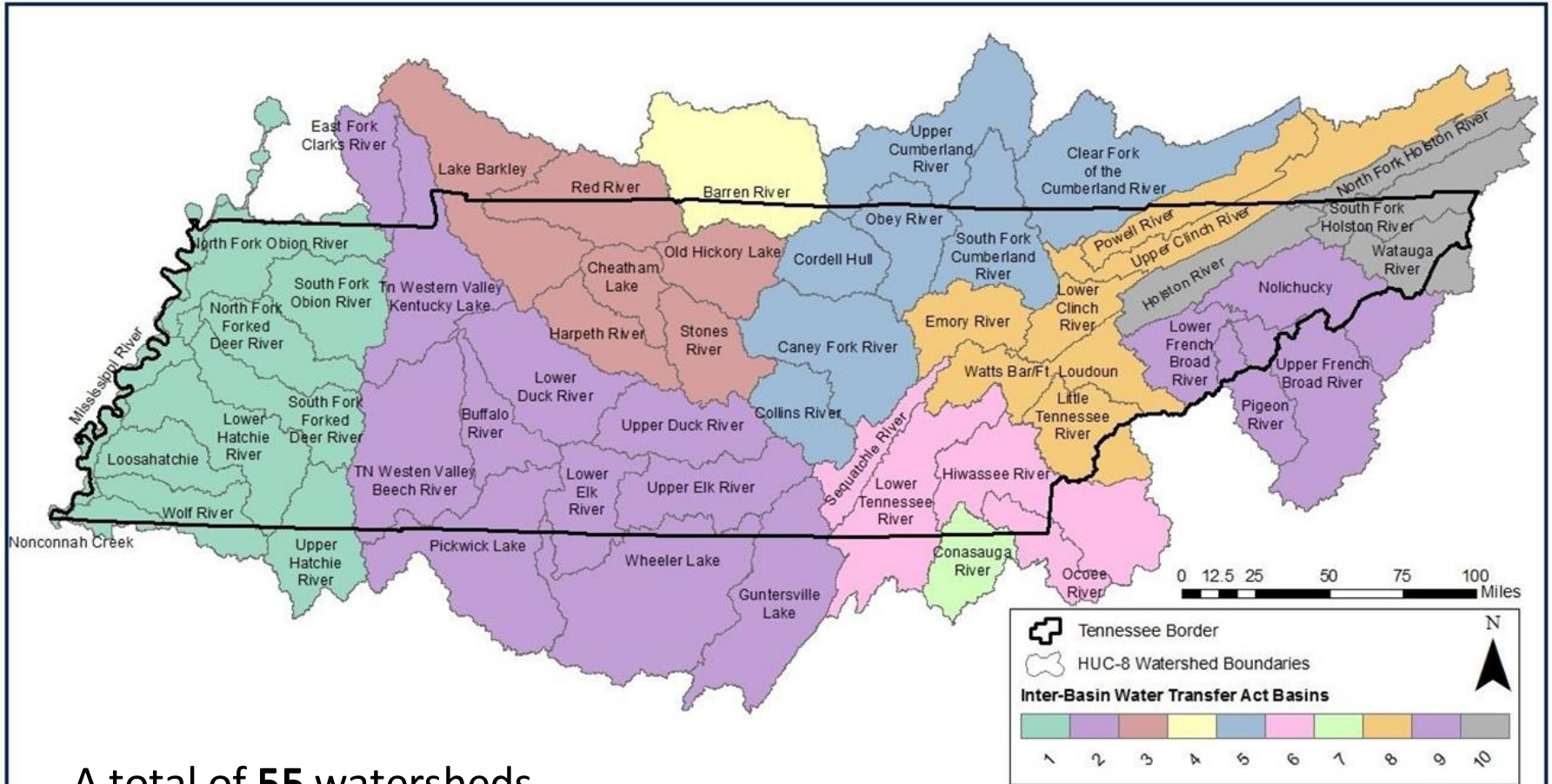
Tennessee Rivers and Lakes



The longest rivers in Tennessee are the **Mississippi River**, **Cumberland River** and **Tennessee River**.

Kentucky Lake, **Lake Gunter** and **Lake Barkley** are the largest lakes in Tennessee, but if you look exclusively at lakes within the state of Tennessee, the largest lake is **Watts Bar Lake** at almost 40,000 acres in size.

Tennessee Watersheds



A total of **55** watersheds

Tennessee

One of the most biodiverse states in the nation

Currently there are more than **325 species of fish, 89 mammals, 61 reptiles, 70 amphibians, and 340+ birds known to inhabit or migrate through Tennessee.** The number of invertebrate species, many of which are endemic to Tennessee, is equally impressive with **256 land snails, 99 aquatic snails, 120+ mussels, 77 crayfish,** and a multitude of insects. There are also more than **2,300 varieties of plants.**

[2015 TN Wildlife Action Plan](#)

What are Natural Resources? (SWAPAE+H)



What information is in the FOTG?

The Tennessee Field Office Technical Guide (FOTG) is the official the repository of conservation planning guidance documents for NRCS FOTG contains:

Section 1 – General References- This section contains general state resource maps, descriptions of Major Land Resource Areas, watershed information, and links to discipline manuals, reports, and handbooks.

Section 2 – Soil and Site Information- his section contains natural and cultural resources data, links to databases, and procedures for interpretation. Climatic data, soils information, Ecological Site Descriptions, Forage Suitability Groups, Cropland Production Tables, Wildlife Habitat Evaluation Guides, Water Quality Guides, and other related information

Section 3 – Conservation Management Systems- This section contains information on NRCS conservation planning criteria, which establish standards for resource conditions that help provide sustained use. Conservation Planning Activities (CPAs), Design and Implementation Activities (DIAs), and Conservation Evaluation and Monitoring Activities (CEMAs) are also found in Section 3.

Section 4 – Practice Standards and Specifications- This section contains NRCS's Conservation Practice Standards and Practice Support Documents. The Practice Standards establish the minimum level of acceptable quality for planning, designing, installing, operating, and maintaining conservation practices to address one or more of the NRCS resource concerns.

Section 5 – Conservation Effect- This section contains information on conservation effects that provide indicators of the impacts conservation practices and systems have on the natural and cultural resources.

TN Field Office Technical Guide (FOTG) available here: <https://efotg.sc.egov.usda.gov/#/state/TN/documents>

Review of Tennessee FOTG Requirements

Planners should be thoroughly familiar with the conservation practice standards that have been incorporated into the Tennessee Field Office Technical Guide (FOTG) and are being considered as part of the offered alternatives for addressing the client's resource concerns.

Planners should also follow the Statement of Work (SOW) requirements for each practice and utilize specifications, Technical Notes, Operation and Maintenance (O&M) instructions, and implementation requirements sheets (IR sheets) that are available for the conservation practices in the Tennessee FOTG (Section 4).

Review of State Laws

- Tennessee Engineering Law can be found here:
<https://www.tn.gov/commerce/regboards/architects-engineers/rules-laws.html>
- Tennessee Department of Environment and Conservation Water Permits:
<https://www.tn.gov/environment/permit-permits/water-permits.html>

CAFO Permitting Process

- [Overview of Process](#)
- TN Department of Agriculture POC
Sam Marshall
319 Nonpoint Source/CAFO Manager
(615) 837-5306 - sam.marshall@tn.gov

State Regulation for Pesticides

- [Rules and Regulations for TN](#)
- [Responsible Pesticide Disposal \(free service\)](#)

Land Grant University Resources;

- [Row Crop Resources](#)
- [Soil, Plant, & Pest Center](#)
- [AFO Information](#)

Nutrient Management

- **University of Tennessee**

<https://utcrops.com/soil/soil-fertility/nutrient-management/>

- **University of Tennessee Fertilizer, Recommendation Development**

<https://utcrops.com/soil/ut-fertilizer-recommendations/>

What is a Conservation Plan?



A conservation plan is the record of decisions and supporting information for treatment of a unit of land meeting planning criteria for one or more identified natural resource concerns as a result of the planning process.

Planning Considerations

National Environmental Policy Act of 1969 (NEPA)

NEPA was written to ensure that Federal Agencies consider the environmental effects of their proposed actions and consider ways to avoid, minimize or mitigate adverse effects before implementing the action (e.g., conservation practices). This is the main purpose of the NRCS Environmental Evaluation process, which is documented by using the Environmental Evaluation Worksheet (CPA-52) for **all** NRCS planning activities.

Natural Resources

There are two documents located in the Field Office Technical Guide (FOTG)-Section 3 – National Resource Concern List and Planning Criteria

1. National Resource Concern List and Planning Criteria (.pdf) planning criteria for planners and the tools needed to assess them with.
2. SWAPAE+H Resource Concern Fact Sheets (.pdf) are located in this section and can be helpful explaining the resource concern and offers examples of causes and solutions.

**National Resource Concern List
and Planning Criteria**

Natural Resources Conservation Service (NRCS)



USDA United States Department of Agriculture
Natural Resources Conservation Service

**SOIL
Bank Erosion**

Soil

Bank Erosion from Streams, Shorelines, Channels

Bank Erosion from Streams, Shorelines, Channels

Erosion resulting from poor land management practices, storm events, wave action, rain, ice, wind, runoff, loss of vegetation, hydrologic dynamics, stream isolation from floodplains, and/or other disturbed/altered geomorphological processes.

What is it?

Stream stability is an active process, and while streambank erosion is a natural part of this process, it is often accelerated by altering the stream system. Streambank erosion is that part of channel erosion in which material is eroded from the streambank and deposited at the base of the slope or in the channel. Streambank erosion is usually associated with erosion of the streambed. It occurs along perennial, intermittent, and ephemeral streams.

Why is it important?

The benefits of proper streambank stabilization go far beyond preventing loss of land and keeping sediment out of streams. Streambank erosion increases sediment in the stream degrading water quality and resulting in the loss of fertile bottomland. The quality of wildlife habitat is impacted both on land and in the stream. Streambank erosion increases the stream's sediment load and changes its shape and function. When this happens, the stream loses its ability to transport sediment which can cause it to become wide and shallow. The stream channel can become braided, quality habitat lost, and the increased sediment can reduce overall biological productivity.

What can be done about it?

Determining the cause of accelerated streambank erosion is the first step in solving the problem. Development in the watershed often alters the stream equilibrium by changing rainfall-runoff relationships. Many of the traditional methods of dealing with streambank erosion, such as rock revetments, are expensive to install and maintain. While hard solutions are often needed to protect infrastructure, these treatments may solve the problem at the expense of habitat and stream corridor aesthetics. There are some promising developments in the area of streambank stabilization and stream restoration. Greener and more natural treatment alternatives are being more widely adopted. Soil bioengineering practices, native material revetments, combinations of rock and vegetation, and instream structures help to stabilize eroding banks. These techniques can be used to move a stream toward a healthy, stable and self-maintaining system.

Bank Erosion from Streams, Shorelines, Channels at a Glance

Problems / Indicators—Eroding Banks, degrading streambed, and manipulated stream channels	
Typical Causes	Examples of Typical Solutions
<ul style="list-style-type: none"> Increased runoff due to land use changes in the watershed Eroding or unstable streambanks Exposed tree roots of ong banks Large runoff events Degraded riparian areas Uncontrolled livestock access 	<ul style="list-style-type: none"> Bank armor and protection (rock or other approved material) Soil bioengineering practices Instream structures Native material revegetations Riparian areas with native or locally adapted vegetation Control livestock access to the water bodies

Ecological Science and Planning Team

State Office, Nashville

State Resource Conservationist- Linda Ortiz

TSP State Coordinator/Backup- Danny Jones/ Jason McAfee

State Agronomist- Leslie Honicker,

State Water Quality Specialist- Nathan Hicklin

Acting State Forester- Robin Mayberry

State Grazing Specialist- Tammy Swihart

Area 1 (Jackson)- Gary Blackwood, Area Resource Conservationist

Area 2 (Murfreesboro)- Cory Hodge, Area Resource Conservationist

Area 3 (Cookeville)- David 'Jake' Watson, Area Resource Conservationist

Area 4 (Knoxville)- Amber Johnson, Area Resource Conservationist

Engineering

Engineering Practices:

- Conservation practices that specifically require engineering services in planning, design and installation are identified in Title 450, National Handbook of Conservation Practices, as having engineering discipline leadership from the Conservation Engineering Division, and subsequently in TN FOTG Section IV, Conservation Practices Standards. Tennessee Code 62-2-101 and Rules of the State Board of Architectural and Engineering Examiners, Chapter 0120-02, govern the practice of engineering in Tennessee. In order to safeguard life, health and property and to promote public welfare, only properly qualified persons will practice engineering in Tennessee.

Conservation Practice Standards, drawings, specifications, etc. can be found in Section 4 of NRCS Tennessee's FOTG:

<https://efotg.sc.egov.usda.gov/#/state/TN/documents>

Engineering Team

TN Engineering Organization:

State Office Engineering, Nashville

Area 1 Engineering Office, Jackson

Area 2 Engineering Office, Murfreesboro

Area 3 Engineering Office, Cookeville

Area 4 Engineering Office, Knoxville

Engineering Key Personnel for TSP purposes:

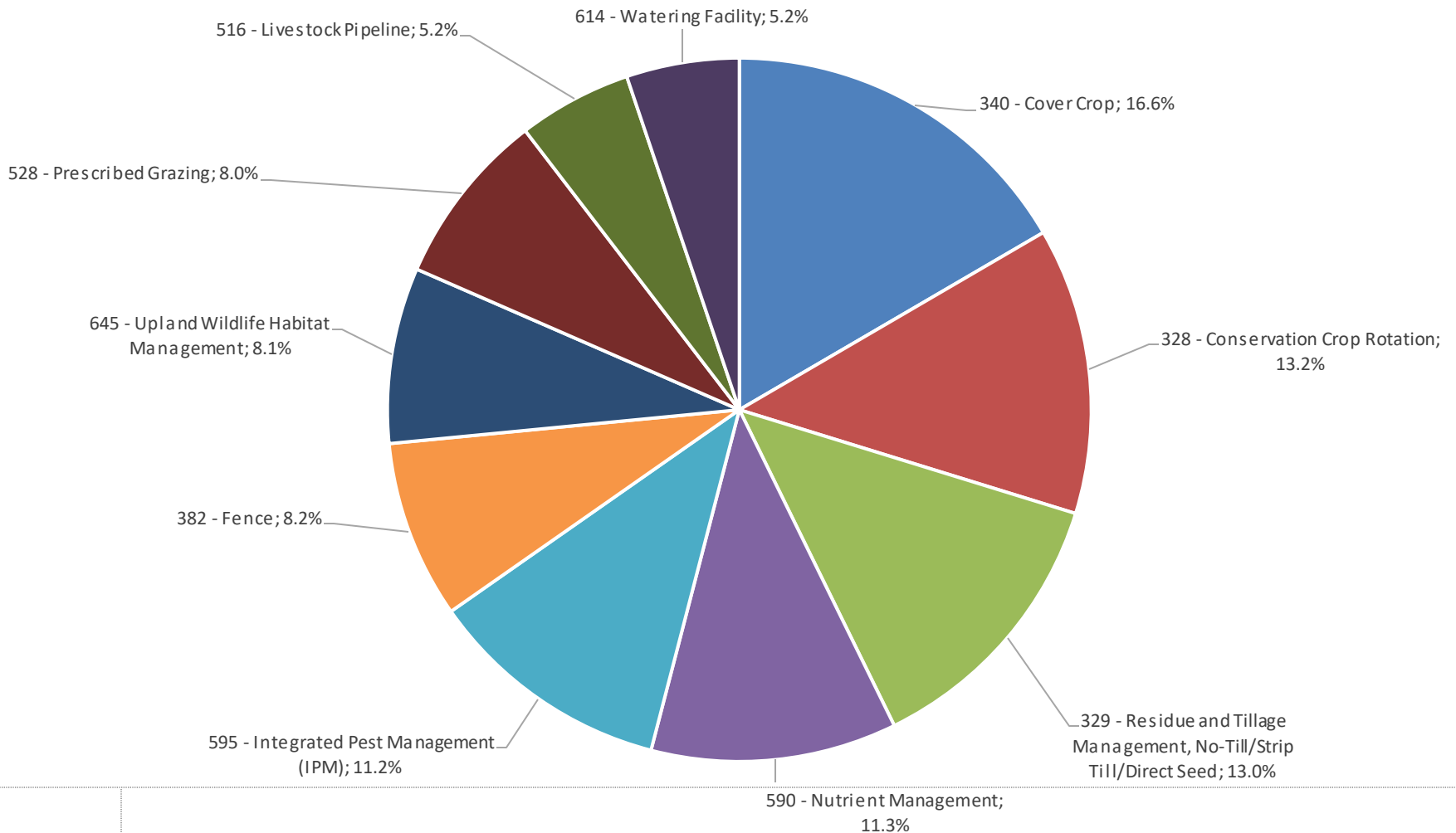
State Conservation Engineer Office: 615-277-2559

TSP Engineering Contact: 615-277-2581

Project Specific: Local DC / Related Area Office

Top Implemented Conservation Practices in Tennessee

FY2005 to FY2022



Expected TSP Workflow in Tennessee

- The TSP State Coordinator will be responsible for working directly with the TSP to review conservation planning documentation and required trainings for the National Planner Designations (Level I and Level III).
- Any conservation plans submitted as part of Module 9 for Level III will be reviewed by the District Conservationist (DC) at the local USDA Service Center or by the Area Resource Conservationist.
- The TSP State Coordinator and State Technical Leads will conduct plan reviews for TSP planner designation renewals.
- TSPs will work with the local District Conservationist to make sure the proper environmental evaluations (NRCS CPA-52) are completed.

Additional References and Training Opportunities

- Level I and Level III Planner Certification Requirements
- State Specific Trainings and Assessment Tools
- CNMP Development Training
- Tennessee-NRCS TSPs Listening Sessions (every quarter)
- National NRCS website- TSP Resources
<https://www.nrcs.usda.gov/getting-assistance/technical-assistance/technical-service-providers>
- YouTube Training Videos
(<https://www.youtube.com/playlist?list=PL0Oy58bSZgQHf29xdF2IGavLtXWNG-erR>)
- NRCS Science & Technology Training Library (Conservation Webinars)
<https://conservationwebinars.net/>
- TSP Network (<https://www.technicalserviceprovidernetwork.org/>)

Certificate of Completion

After viewing the TN State Specific Training module, please print and sign the completion certificate on the following slide.

The certificate is your acknowledgement that based on the information provided in this module, you have the proper knowledge, skills and ability to conduct planning in Tennessee.

Within your NRCS Registry profile, enter the training and upload the signed certificate to verify completion.

STATE SPECIFIC TRAINING MODULE COMPLETION CERTIFICATE TENNESSEE

I, _____ hereby verify I have viewed and understand the content of Tennessee State
TSP Name
Specific Training Module and affirm I have the knowledge, skills, and ability to conduct conservation planning
services in this state.

TSP Signature

Date

Non-Discrimination Statement

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.