Tennessee Department of Agriculture Nonpoint Source Program Management Program Document

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TENNESSEE DEPARTMENT OF AGRICULTURE
WATER RESOURCES

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List of Acronyms

Name	Acronym
Agricultural Resources Conservation Fund	ARCF
Clean Water Act	CWA
Escherichia coli	*E. coli*
Tennessee Department of Economic and Community Development	ECD
Environmental Field Offices	EFOs
Environmental Protection Agency	EPA
Environmental Quality Incentive Program	EQIP
Farm Services Agency	FSA
Geographic Information System	GIS
Hydrologic Unit Code	HUC
Municipal Separate Storm Sewer System(s)	MS_4
Nitrogen	N
National Agricultural Statistics Service	NASS
National Pollutant Discharge Elimination System	NPDES
Nonpoint Source	NPS
Natural Resources Conservation Service	NRCS
Phosphorus	P
Resource Conservation and Development Councils	RC&D
Soil Conservation Districts (all 95 counties)	SCD
State Soil Conservation Committee	SSCC
State Technical Committee	STC
Tennessee Association of Conservation Districts	TACD
Tennessee Agricultural Enhancement Program	TAEP
Tennessee Association of Utility Districts	TAUD
Tennessee Department of Agriculture	TDA
Tennessee Department of Agriculture – Division of Forestry	TDA-DF
Tennessee Department of Education	TDE
Tennessee Department of Environment and Conservation	TDEC
Tennessee Department of Health, Division of Lab Services	TDH-DLH
Tennessee Department of Transportation	TDOT
Tennessee Nonpoint Source Program	TN-NPS
Total Maximum Daily Load	TMDL
Tennessee Stream Mitigation Program	TSMP
Tennessee Valley Authority	TVA
Tennessee Wildlife Resources Agency	TWRA
United States Army Corps of Engineers	USACE
United States Department of Agriculture	USDA
United States Forest Service	USFS
United States Fish & Wildlife Service	USFWS
United States Geological Survey	USGS
University of Tennessee	UT
University of Tennessee Agricultural Extension Service	UTAES
University of Tennessee Institute of Agriculture	UTIA
University of Tennessee Research and Education Center	UTREC
West Tennessee River Basin Authority	WTRBA

Contents

List of Figures:

List of Tables

List of Appendices

Chapter 1: Introduction

Nonpoint source pollution, historical background, and planning

Water flows through all of our communities and lives in ways seen and unseen.

Tennessee is blessed with an abundance of rainfall and many streams, rivers, lakes and wetlands. We depend on these water bodies for many essential functions, including drinking water (from both surface and ground water sources), recreation, industry, wildlife, irrigating crops, and watering livestock. The health and relative supply of this water is a direct reflection of what we do on the land. In Tennessee, 38% of assessed rivers and streams do not meet water quality standards, primarily due to nonpoint sources of pollution. This type of pollution is not due to a few, isolated, and easily distinguished major polluters – instead we all share in causing this type of pollution through our collective lack of understanding of how individual actions on the landscape add up to have significant, harmful impacts on the quality of our water resources. The Tennessee Nonpoint Source program (TN-NPS) is focused on educating people about the link between land use and water pollution, and eliminating nonpoint source impacts by implementing positive practices on the land.

Stream bank restoration

Nonpoint Source Pollution

Nonpoint Source pollution is best defined as a contrast to point sources of pollution. While point sources of pollution are transported to surface and ground water by a discernible and defined conveyance, such as a pipe or a ditch, nonpoint sources are transported to surface and ground water through overland flow or general runoff from areas adjacent to the water resource. Examples of nonpoint source pollution include runoff from residential neighborhoods, construction sites, abandoned mining operations, agricultural operations, and forestry activities. Additional sources of nonpoint source pollution include affects to water resources caused by stream modifications, failing septic tank systems, and the non-permitted disposal of solid waste. Each time it rains, stormwater runoff from urban, agricultural, and developing areas collects sediment, nutrients, pathogens, and other pollutants and deposits them in water bodies, increasing the risks to health of people and wildlife, as well as increasing water treatment costs for taxpayers and businesses.

People can contribute to nonpoint-source pollution without even realizing it. Nonpoint sources of pollution in urban areas may include parking lots, streets, and roads where stormwater picks up oils, grease, metals, dirt, salts, and other toxic materials. In areas where crops are grown or in areas with landscaping (including grassy areas of residential lawns and city parks), irrigation, and rainfall can carry soil, pesticides, fertilizers, herbicides, and insecticides to surface water and groundwater. Bacteria, microorganisms, and nutrients (nitrogen and phosphorus) are common nonpoint-source pollutants from agricultural livestock areas and residential pet wastes. These pollutants are also found in areas where there is a high density of septic systems or where the septic systems are faulty or not maintained properly. Other pollutants from nonpoint sources include salt from irrigation practices or road de-icing, and acid drainage from abandoned mines.

Section 319 of the federal Clean Water Act established the Nonpoint Source Program, and requires that states develop a Management Program to establish direction for their program. In essence, this Management Program Document is a strategic plan. The Tennessee Nonpoint Source Program (TN-NPS) has developed this revision to the Management Program Document, which was originally approved by the US Environmental Protection Agency (EPA) on September 1, 1989. This revision sets specific long-term goals for the TN-NPS program for the next five years, and sets specific short-term goals to be accomplished annually over the next five years, within each major source of nonpoint source pollution in Tennessee.

Historical Background

After Congress passed the Clean Water Act in 1972, the water-quality community within the United States placed a primary emphasis on addressing and controlling point source pollution (pollution coming from discrete conveyances or locations, such as industrial and municipal waste discharge pipes). Not only were these sources the primary contributors to the degradation of U.S. waters at the time, but the extent and significance of nonpoint source pollution were also poorly understood and overshadowed by efforts to control pollution from point sources.

The United States has made tremendous advances in the past 25 years to clean up the aquatic environment by controlling pollution from point sources such as industries and sewage treatment plants. Unfortunately, not enough was done to control pollution from diffuse, or nonpoint, sources.

At the beginning of the twenty-first century, nonpoint source pollution stands as the primary cause of water-quality problems within the United States. According to the *National Water Quality Inventory* (published by the U.S. Environmental Protection Agency), it is the main reason that approximately 40 percent of surveyed rivers, lakes, and estuaries are not clean enough to meet basic uses such as fishing or swimming.

In 1987, Congress amended the Clean Water Act to focus greater national efforts on managing NPS pollution. In the Water Quality Act of 1987, Congress amended section 101, "Declaration of Goals and Policy", to add the following fundamental principle:

> *It is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of the Act to be met through the control of both point and nonpoint source of pollution.*

From this directive, Congress enacted Section 319 of the CWA, which established a national program to control NPS water pollution. Section 319 authorizes the establishment of a Nonpoint Source Program within each state and requires each state to develop a Management Program to establish direction for their program. Appendix A contains historical documents pertaining to the establishment of the 319 program in the State of Tennessee.

Since the late 1980's, the United States has made significant progress in addressing nonpoint source pollution concerns through the work of the mandated, state NPS programs. Under Section 319, states are to address NPS pollution by assessing NPS source pollution problems and causes in the state, adopt Management Programs to control NPS pollution, and implement the Management Program.

Another key component to Section 319 is the authorization it provides for USEPA to issue grants to states to assist them in implementing their management programs. Other federal agencies also provide technical and financial support through grants and loans to states, local communities, and farmers and other landowners, to implement nonpoint source pollution controls. In addition, many state and local entities are dedicating increasing amounts of funding to control nonpoint source pollution.

In Tennessee, responsibility for the Nonpoint Source Program was originally given to the Tennessee Department of Environment and Conservation (TDEC) in 1989. In 1995, the program was transferred to the Tennessee Department of Agriculture (TDA) by Governor Ned McWherter. Tennessee's program is the only Nonpoint Source program in the nation to be located in a Department of Agriculture. The move was logical and practical because the leading source of NPS

pollution in Tennessee is agriculture. By being in the state's agricultural department, the TN-NPS program is able to have very close relationships and active partnerships with USDA-NRCS, University of Tennessee Extension Service, the Tennessee Farm Bureau, various agricultural commodity groups, and many other cooperating agricultural entities.

The TDA manages the NPS program in Tennessee with approval and oversight of USEPA. The TN-NPS program applies for and is awarded a grant from USEPA each year in order to implement this program. In order to carry out this program, TDA relies heavily on strong partnerships with a wide variety of agencies and local stakeholders with the passion and capability to put projects "on the ground". See section 5 for more information on partnerships of the TN-NPS program.

A set of pertinent, historical documents related to the TN-NPS program are located in Appendix A.

Purpose of this Document

The purpose of this document is to establish how the TN-NPS program will implement its Management Program over the next five years. This document has been prepared to answer the following questions:

- What are the goals of the TN-NPS program?
- What objectives need to be met in order to achieve those goals?
- How will those objectives be achieved?
- When will those objectives be achieved?
- Who is responsible for ensuring that program objectives are achieved?
- How will the program measure and track progress towards achieving objectives?

By answering these questions, this Management Program Document provides the TN-NPS with an instrument to measure success in meeting federal and state water quality goals. In addition, the plan establishes how the program will use the efforts and input of citizens at the local level to identify and address nonpoint source pollution. The plan will also serve the TN-NPS as a tool to evaluate effectiveness and efficiency of program activities and make adjustments as necessary to maximize program success. The plan is meant to be a dynamic document and as the TN-NPS program makes progress towards its goal, this plan will be updated to reflect knowledge gained and lessons learned.

This document is a revision of Tennessee's Nonpoint Source Management Program, which was originally approved by the US Environmental Protection Agency on September 1, 1989 and was revised on September 1, 2000. This document will be revised again in 2019.

Planning and Goals

The successful administration of any program requires some level of planning. The TN-NPS program is no different. This plan is part of that process, and one significant aspect of this plan is the goals that have been set for the program. Both long term goals and annual goals have

been identified, all of which correspond to the four elements of TN-NPS program's overriding mission statement.

TN-NPS Program Mission Statement

The mission of the TN-NPS Program is to: measurably reduce nonpoint source pollution in Tennessee, Measurably improve Tennessee's water quality, continuously strengthen and expand partnerships, and increase the water resources stewardship of Tennessee's citizens.

The specific long and short term goals will be the basis of all future NPS program projects in Tennessee. The TN-NPS program will tie each future project to specific long term goals and annual milestones. These goals are fully described in Section 3 (*Strategy for Addressing Nonpoint Source Pollution Issues*). For a quick glance at the broadest goals, here are the long term goals for the TN-NPS program:

Long Term Goal No. 1:
Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.

Long Term Goal No. 2:
Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.

Long Term Goal No. 3:
Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.

Long Term Goal No. 4:
Track interim progress towards restoration of impaired water bodies.

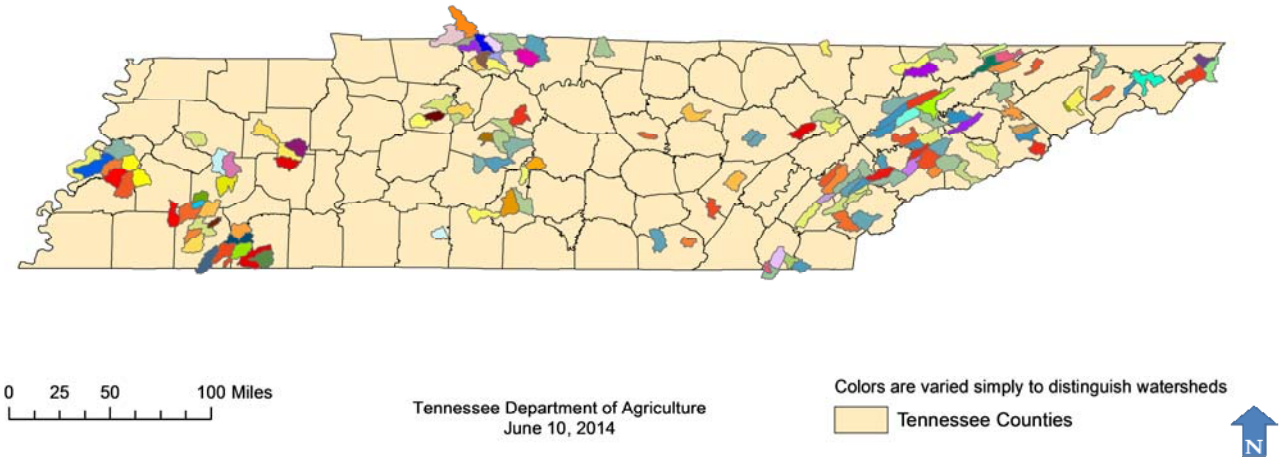
Long Term Goal No. 5:
Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.

Long Term Goal No. 6
Fulfill all obligations under grant award agreement with USEPA annually.

Current and Future Directions

Nonpoint source pollution derives from many different sources over large geographic areas so regulating and controlling it are challenging. The watershed approach to managing nonpoint source pollution, however, is proving to be an effective technique. Everyone lives in a watershed, or an area of land in which all water drains. According to the U.S. Geological Survey, the nation can be divided into approximately 2,149 medium-sized watersheds, averaging about 1,700 square miles in each area. The watershed approach relies on coordinating all relevant federal, state, and local government agencies, and the stakeholders who live in a particular watershed, to help solve priority problems in that watershed. Historically, many water-quality problems were addressed piecemeal in individual water bodies by individual entities, usually limited by political, social, and economic boundaries. The watershed approach, however, relies on the coordination of all entities and stakeholders to help solve the watershed's most serious environmental problems, which in many instances are caused by nonpoint source pollution.

FIGURE 1: WATERSHEDS IN TENNESSEE RECEIVING 319 GRANT FUNDS FOR RESTORATION WORK, 2000 - 2014



All restoration projects funded each year in Tennessee with NPS program grant funds are targeted in a specific watershed. Each of these watershed projects is prioritized each year based on impairment status, availability of concerned and capable local interest groups to lead the project, matching funds available, strength of partnerships in the watershed, likelihood of achieving success, proportion of grant funds to go on the ground, etc. The TN-NPS program is proud to be among the national leaders in producing USEPA-approved "Success Stories" on formerly impaired waterbodies. Much of that success is attributable to our proven process of prioritizing projects at the watershed scale. Our prioritization process exactly meets the aim of the new NPS program guidance from USEPA to, "...provide...an increased emphasis on watershed project implementation in watersheds with impaired waters."

The TN-NPS Program is non-regulatory and promotes voluntary, incentive-based solutions. The program is a cost-share program, meaning that it generally pays for 60% of the cost of a project. It is the responsibility of the grantee to provide the remaining 40%, usually in cash and "in-kind" services. It primarily funds two types of projects:

1. **Watershed restoration projects:** these projects implement Watershed Based Plans and aim to improve an impaired waterbody, or prevent a non-impaired water from becoming placed on the 303(d) List. Projects of this type receive highest priority for funding. All projects implementing BMPs must be based on an approved "Watershed Based Plan". These would generally be funded with Implementation Funds.
2. **Educational Projects:** these projects are funded through the TN-NPS program to raise awareness of the severity of NPS pollution and practical steps that can be taken to eliminate or reduce it. Projects funded can either have a statewide, general public aim or can focus in on local, targeted audiences with specific messages. These would be paid for with Program Funds.

State nonpoint source programs provide for the control of nonpoint source pollution primarily through best management practices (BMPs), which are on-the-ground technical controls used to prevent or reduce nonpoint source pollution. Common practices used to control nutrients from agriculture include altering fertilizer and pesticide application methods and fencing livestock out of waterways. Developing a buffer of vegetation between the land and the stream bank can help filter all types of nonpoint source pollutants from entering a receiving water body, including sediment transported by overland flow. Stream-bank protection and channel stabilization practices are also very effective in preventing sediment deposition in the water by limiting the bank erosion processes and streambed degradation. Urban runoff can be controlled by establishing trenches, basins, and detention ponds at construction sites to hold, settle, and retain suspended solids and associated pollutants. Basic pollution-prevention measures introduced around the home can also prevent nonpoint source pollutants from entering storm water. Practices include the proper storage, use, and disposal of household hazardous chemicals; proper operation and maintenance of onsite disposal systems; installation of a rain garden; and even proper disposal of pet waste so that it does not wash into storm drains.

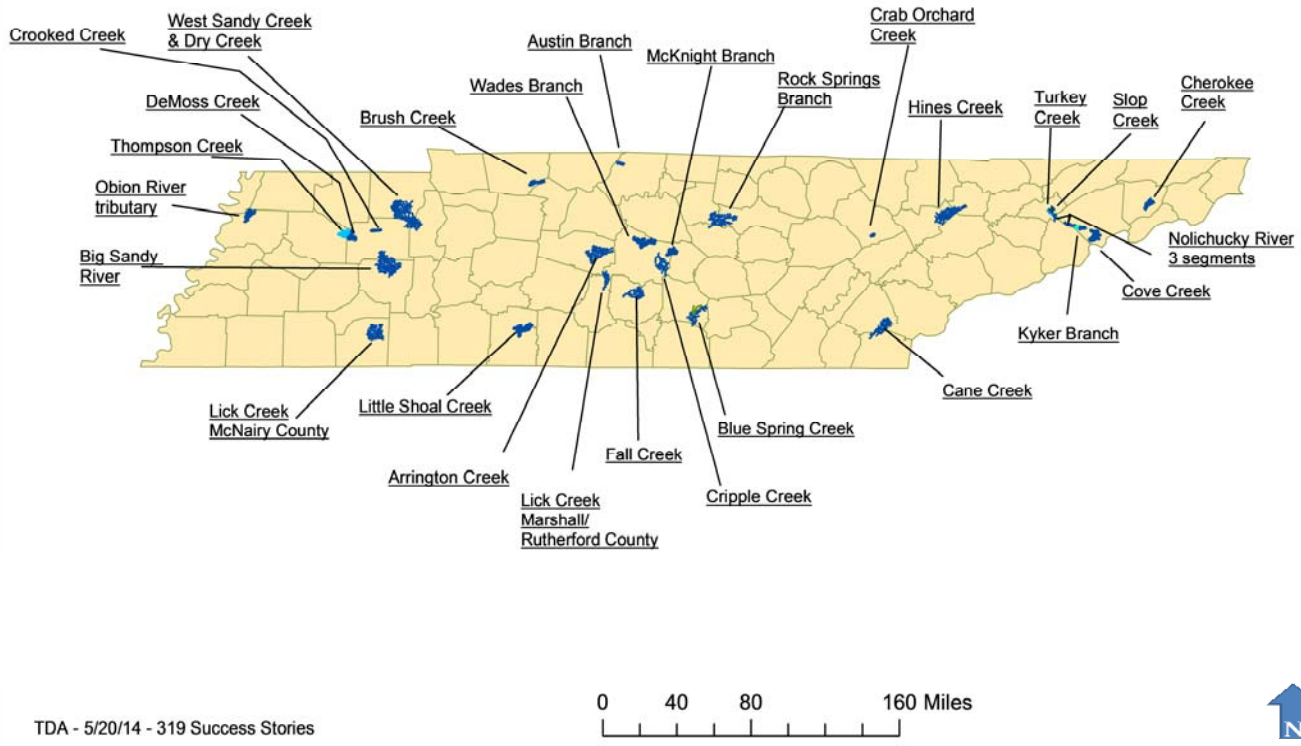
No funds from the TN-NPS program are given directly to individual landowners. All grant money is awarded to organizations/agencies that administer and oversee the local project. Eligible applicants include non-profit organizations, local governments, state agencies, soil conservation districts, and universities. These organizations can then enter into work agreements with individual landowners to reimburse them for work done on their land. All payments made with grant funds are on a reimbursement basis.

The strategy implemented by the TN-NPS program has proven to be very successful. Each year, the Request for Proposal process is highly competitive, with many more proposals submitted than could ever be funded. Every two years (coinciding with the 303(d) list cycle) we submit new "Success Stories" to EPA for inclusion in their national tally. As of the writing of this report,

Tennessee remains near the top of the list of states with the most Success Stories (http://water.epa.gov/polwaste/nps/success319/). See Chapter 3 for more information on how the TN-NPS program selects and submits documented "Success Stories".

FIGURE 2: TENNESSEE SUCCESS STORIES

From 2004 to 2014, these streams have improved and met water quality standards at least in part due to installation of Best Management Practices funded by the Nonpoint Source Program.



The success of this Management Program is heavily dependent upon partnerships with other public agencies, non-profit associations, local governments, and private citizens. Success as demonstrated in the map above comes only as a result of collaboration between funders, overseers, and implementers; in this case the TN-NPS program, grantee partners, and willing landowners, respectively. Strengthening and enlarging this essential network of relationships will ensure that lines of communication are created and maintained between the TN-NPS program and its partners. This, in turn, will result in the initiation of even more, excellent NPS projects in the future aimed at eliminating NPS impairments in Tennessee waters.

In an effort to successfully meet or exceed our Long Term Goals, the TN-NPS program is always looking for ways to improve; to be more effective and efficient. As the next five years are considered, there are several areas where the TN-NPS program will pursue improvements or expansion.

- Expand the use of the internet, and in particular our website, to educate, transfer technology/information, and provide faster and higher quality service to partners and contractors.
- Build capacity - develop new partners that could serve as potential grantees or cooperators in future nonpoint source reduction projects.
- The TN-NPS program will attempt to improve communication with partner agencies and the public in general through experimenting with using additional tools such as a quarterly or semi-annual newsletter, or perhaps maintaining a Facebook page for the program.
- The TN-NPS program will strive to do its part to complete Tennessee's Nutrient Reduction Strategy. Once adopted, the TN-NPS program will work to implement the nonpoint portion of the strategy.
- The TN-NPS program will work closely with the USDA-NRCS to refine the Mississippi River Basin Initiative (MRBI), National Water Quality Initiative (NWQI), Tennessee Healthy Watersheds Initiative, and other joint, watershed efforts. As funding allows, we will attempt to exceed all obligations as they pertain to NPS pollution in these initiatives.
- As things currently are, there is often a long lag time between the time a partner applies for a grant and when the TN-NPS program can write them a contract. During these five years, we will experiment with ways to shorten the amount of time between the submittal of a project proposal and the execution of a contract for the project.
- The TN-NPS program is aware of the Recovery Potential Tool, but has no real experience with it. During the next five years we plan to discuss with TDEC and USEPA ways we can benefit from using the Recovery Potential Tool to strengthen our project prioritization process.

Chapter 2: Tennessee's Water Resources

Water Quality, Quantity, And Pollution Concerns

Quantity of Water in the State of Tennessee

Tennessee has an abundance of water resources with over 60,000 miles of rivers and streams and over 570,000 lake and reservoir acres. Several large reservoirs are shared with bordering states including Reelfoot Lake (KY) Pickwick Lake (AL), Kentucky Lake (KY), Lake Barkley KY), Guntersville Lake (AL), South Holston Lake (VA), and Dale Hollow Lake (KY). It is one of the most biodiverse inland states in the nation. From the Appalachian Mountains in the east to the Mississippi River floodplains in the west, Tennessee's geography is diverse. Elevations vary from 6,643 feet at Clingman's Dome in the Great Smoky Mountains National Park, to less than 200 feet near Memphis.

The average statewide precipitation is over 50 inches annually. Most of this rainfall is received between November and May. Historically the driest month is October. The average summer high temperature is 91 degrees Fahrenheit, while the average winter low temperature is 28 degrees Fahrenheit.

Tennessee's population is growing rapidly. According to the 2010 Census, Tennessee's population is over 6,346,105, which is an 11.5 percent increase in population from the 2000 Census (Secretary of State, 2005). This puts a greater burden on the state's waterways. There are 95 counties in Tennessee.

Reestablishment of riparian buffer after installation of livestock exclusion fencing.

Tennessee Facts

State population (2010 Census)	6,346,105
Largest Cities (2010 Census)	
Memphis	646,889
Nashville	601,222
Knoxville	178,874
Chattanooga	167,674
Clarksville	132,929
Murfreesboro	108,755
Jackson	65,211
Johnson City	63,152
Number of Counties	95
State Surface Area (square miles)	42,244
Number of Major Basins	13
Number of Level III Ecoregions	8
Number of Level IV Ecoregions	31
Number of Watersheds (HUC8)	55
Number of Stream Miles Forming State Border	213
(The Mississippi River forms most of the stream miles shared by another state.)	
Stream Miles Statewide (NHD)	60,394
Largest Rivers at Low Flow (7Q10 in $ft^3/sec.$)	
Mississippi River at Memphis	109,000
Tennessee River at South Pittsburg	12,500
Cumberland River at Dover	2,280
Hiwassee River above Charleston	1,220
Little Tennessee River at Calderwood	1,200
Holston River at Surgoinsville	762
French Broad River near Knoxville	722
South Fork Holston River at Kingsport	550
Duck River above Hurricane Mills	477
Obion River at Megelwood	357
Lake Acres Statewide	572,063
Largest Lakes (size in acres)	
Kentucky Reservoir (Tennessee portion)	117,500
Watts Bar Reservoir	39,000
Barkley Reservoir (Tennessee portion)	37,000
Chickamauga Reservoir	35,400
Estimated Acres of Wetlands	787,000

Quality of Water in the State of Tennessee

Water pollution is a problem for everyone. The average American uses 140 to 160 gallons of water per day for sanitation, drinking, and many other human needs, such as recreation, transportation, and irrigation. Polluted water must be purified before it can be used for these purposes.

On average, treatment and delivery of tap water costs between $4 and $10 per 1,000 gallons. The more polluted water is, the more it costs per gallon to treat. There are other costs associated with water pollution as well.

When the water is no longer safe for recreational activities, the community loses an important resource. Two of the most obvious costs of water pollution are the expenses of health care and loss of productivity while people are ill. The biggest health risks encountered in polluted waters are from pathogens and contaminated fish. Individuals who swim in waters polluted by pathogens can become sick. People, especially children and pregnant women, who eat contaminated fish are at a higher risk for cancer and other health problems than those who do not eat contaminated fish. Subsistence fishermen are faced with the loss of their primary protein source.
When people can no longer eat fish from rivers, streams, and lakes, there is a potential for economic loss in the community. Commercial fishermen lose income when it is no longer legal to sell the fish they catch. As the fishermen move out of the community to find another place to fish, local business can decline.

Another cost of water pollution is the expense associated with keeping waters navigable. Commercial navigation as a means to move goods and services around the country is one of the most economical methods of transportation. As channels fill with sediment from upland erosion, commercial navigation becomes less practical. Silt deposits also reduce the useful lifespan of lakes and reservoirs. They become filled with silt, which decreases the depth of the water until dredging is required or the lake or reservoir is completely filled.

Many waters in Tennessee are of high quality. The best of these have been designated Exceptional Tennessee Waters, where no degradation will be allowed unless that change is justified due to necessary economic or social development and will not interfere with or become injurious to any classified uses existing in such waters.
Exceptional Tennessee Waters are:

- Waters within state or national parks, wildlife refuges, wilderness areas or natural areas.
- State Scenic Rivers or Federal Wild and Scenic Rivers.
- Federally-designated critical habitat or other waters with documented non-experimental populations of state or federally-listed threatened or endangered aquatic or semi-aquatic plants or animals.
- Waters within areas designated Lands Unsuitable for Mining (as long as water resources were part of the justification for the designation).
- Streams with naturally reproducing trout.
- Waters with exceptional biological diversity as evidenced by a score of 40 or 42 on the Tennessee Macroinvertebrate Index (TMI) (or a score of 28 or 30 in subregion 73a), if the sample is considered representative of overall stream conditions.
- Other waters with outstanding ecological or recreational value as determined by the department.
- Outstanding National Resource Waters (ONRWs) - These exceptional Tennessee waters constitute an outstanding national resource due to their exceptional recreational or ecological significance (Table 1).

TABLE 1: OUTSTANDING NATIONAL RESOURCE WATERS	
Waterbody	**Portion Designated as ONRW**
Little River	Portion within Great Smoky Mountains National Park
Abrams Creek	Portion within Great Smoky Mountains National Park
West Prong Little Pigeon River	Portion within Great Smoky Mountains National Park upstream of Gatlinburg
Little Pigeon River	From headwaters within Great Smoky Mountains National Park downstream to the confluence of Mill Branch
Big South Fork Cumberland River	Portion within Big South Fork National River and Recreation Area
Reelfoot Lake	Tennessee portion of the lake and its associated wetlands

A current list of known high quality waters, which includes both Exceptional Waters and Outstanding National Resource Waters is available on the state's website at http://tn.gov/environment/water.shtml . Additional high quality waters will be added to the list as they are identified.

The Tennessee Department of Environment and Conservation is the state agency responsible for monitoring and assessment of Tennessee waters. In that role, they are required to submit to EPA a list of impaired and threatened waters as part of the Clean Water Act. This is known as the 303(d) list of impaired waters. They are also charged with submitting a summary report of water quality in Tennessee. Both of these publications must be submitted every two years or biennially. The 303(d) list provides information on causes and sources of pollutants to impaired stream and river segments and also to lake acres. The list also provides priority TMDL information. Tennessee's approved 2012 303(d) list and 305(b) report can be found at the following website links:

http://www.tn.gov/environment/water/docs/wpc/2012_305b.pdf .

According to USGS's National Hydrography Dataset (NHD) at the 1:100,000 scale there are 60,418 miles of streams and rivers in Tennessee. The division was able to assess almost half (28,423 miles) of the stream miles in the state. Of the assessed streams, 52 percent are fully supporting of the designated uses for which they have been assessed.

1. 6,391 of the total stream miles (11%) are **Category 1**, fully supporting all designated uses.
2. 8,394 of the total stream miles (14%) are **Category 2**, which is fully supporting of some uses, but not assessed for others. Many of these streams and rivers have been assessed as fully supporting of fish and aquatic life, but have not been assessed for recreational uses.
3. 31,996 of the total stream miles (53%) are in **Category 3**. These waters have insufficient data to determine if classified uses are met.
4. 3,791 of the total stream miles (6.3%) have been identified as **Category 4,** impaired but TMDLs are not needed. 3,605 stream miles (6%) are **Category 4a**, which have had TMDLs for all impairments approved by EPA. Zero miles are **Category 4b**, which are impaired

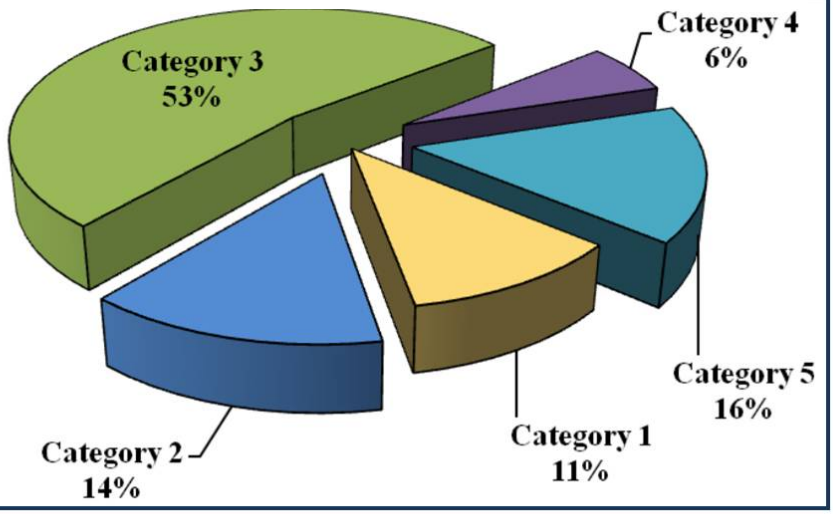
waters that do not require a TMDL. 186 stream miles (0.3%) are **Category 4c** where it has been determined that the cause of impairment is not a pollutant.

5. 9,847 of the total stream miles (16%) are in **Category 5**, waters that are impaired or threatened and need TMDLs for the identified pollutants.

TABLE 2: ASSESSED STREAM MILES

Category Assessment	**Miles**
Total Miles	60,418
Total Assessed Miles	28,422
Category 1	6,391
Category 2	8,394
Category 3	31,996
Category 4a	3,605
Category 4b	0
Category 4c	186
Category 5	9,847

FIGURE 3: PERCENT OF STREAMS and RIVERS ASSESSED FOR EACH CATEGORY



Tennessee has over 90 public reservoirs or lakes with a total size over 572,000 acres (Table 3). For the purpose of this report, a reservoir or lake is publicly accessible and larger than five acres. Most lakes in Tennessee are reservoirs that were created by the impoundment of a stream or river. The only large natural lake is Reelfoot Lake, thought to have been formed by a series of earthquakes in 1811 and 1812. For the purposes of this report, the generic term "lake acre" refers to both reservoirs and lakes.

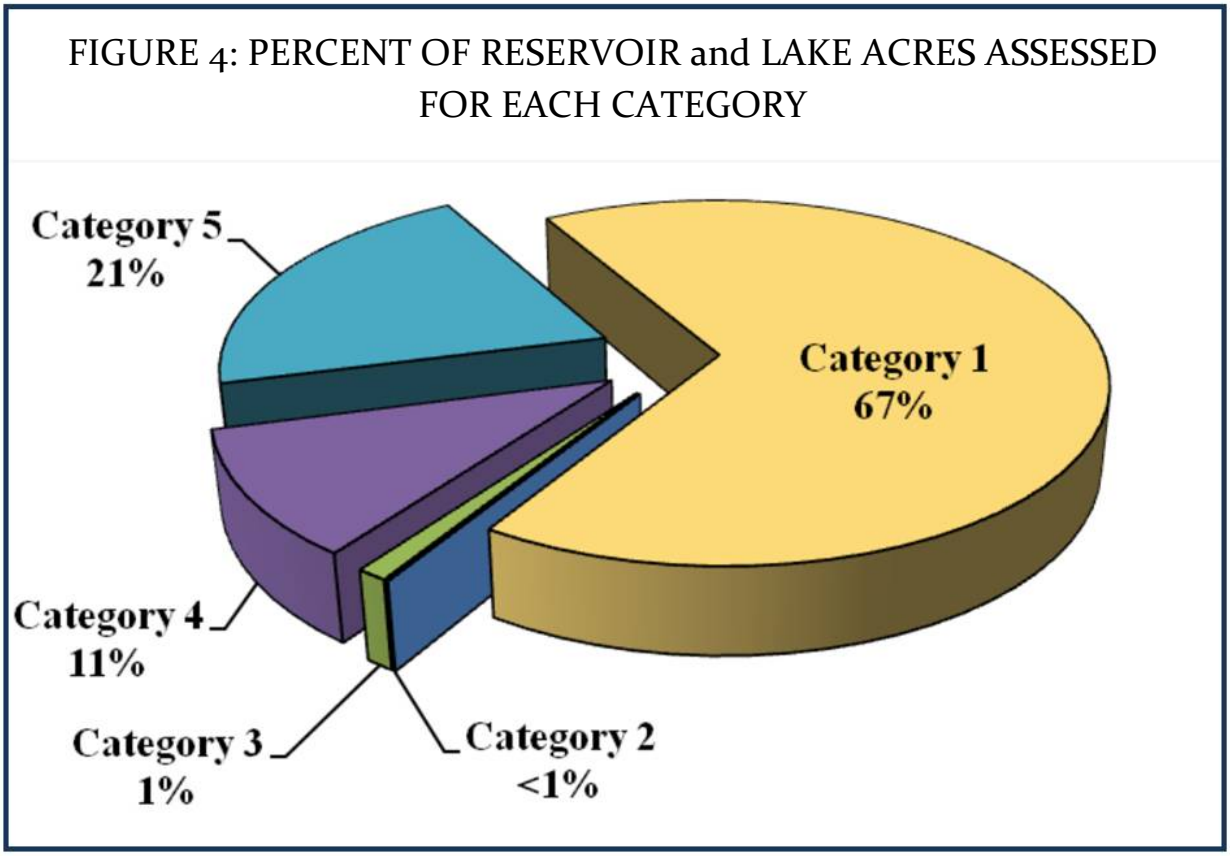
TABLE 3: ASSESSED RESERVOIR and LAKE ACRES

Category Assessment	Support Assessment
Total Acres	572,063
Total Assessed Acres	565,595
Category 1	383,630
Category 2	141
Category 3	6,468
Category 4	62,522
Category 5	119,302

By using available data, the Division of Water Resources was able to assess 565,595 lake acres. This means that 98.9 percent of the lake acres in Tennessee have been assessed. Of the assessed lake acres, 68 percent are fully supporting of the designated uses for which they have been assessed. All lake acres were placed into one of five use categories. The majority of lake acres were assessed as Category 1 (Figure 4).

1. 383,630 of the total lake acres (67.1%) are Category 1, fully supporting of all designated uses.
2. 141 of the total lake acres (0.02%) are Category 2, fully supporting of some uses, but without sufficient data to determine if other uses are being met.
3. 6,468 of the total lake acres (1.1%) are placed in Category 3, not assessed due to insufficient data to determine if uses are being met.
4. 62,522 of the total lake acres (10.9%) are assessed as Category 4, impaired for one or more uses, but a TMDL is not required.
5. 119,302 of the total lake acres (20.9%) are assessed as Category 5, impaired for one or more uses and needing a TMDL. These reservoirs and lakes are placed on the 303(d) List of impaired waters in Tennessee.

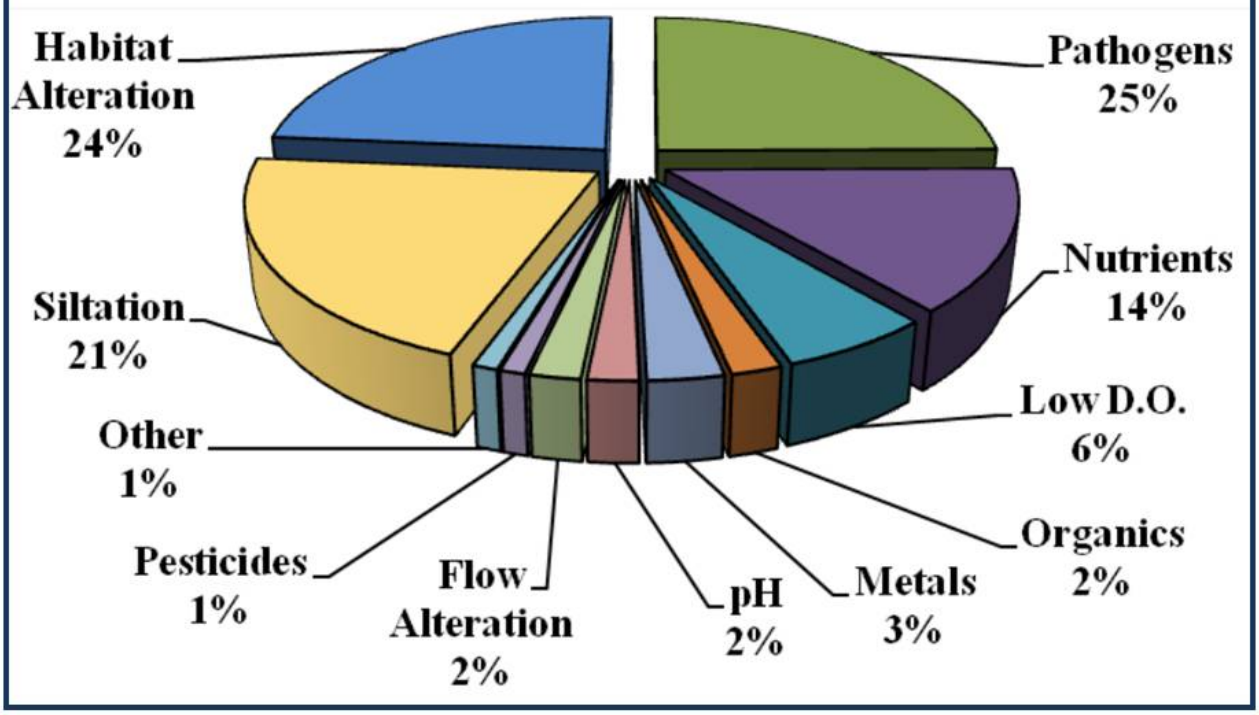
FIGURE 4: PERCENT OF RESERVOIR and LAKE ACRES ASSESSED FOR EACH CATEGORY



Nonpoint Source Water Pollution Concerns in the State of Tennessee

According to the 2012 303(d) list there are 10, 827.77 miles of impaired streams due to Nonpoint Source Pollution in Tennessee. There are approximately 19, 201.70 acres of lake impaired by NPS source pollutants in the state. Pollutants such as sediment/silt, habitat alteration, pathogens, and nutrients are the leading causes of impairment in Tennessee streams and rivers. Other frequent pollutants in streams and rivers include toxic substances, such as metals and organic pollutants. Flow alteration, pH changes, and low dissolved oxygen are other common causes of pollution. According to the 2012 305(b) report, there are 48 streams posted with a water contact advisory due to high pathogen levels. There are 7,385 stream miles impaired by *E. coli*.

FIGURE 5: RELATIVE IMPACTS OF POLLUTION IN IMPAIRED RIVERS and STREAMS



Leading Causes of Nonpoint Source Pollution in Streams and Rivers in Tennessee

Habitat Alteration

Many streams in Tennessee appear to have impaired biological communities in the absence of obvious chemical pollutants. Often the cause is physical alteration of the stream which results in a loss of habitat.

Habitat alteration is the physical modification of a stream within the channel or along the banks. Common types of habitat alteration include loss of riparian habitat such as cutting trees or mowing along stream banks, destabilization of the banks from riparian grazing or channelization, gravel dredging or filling, culverting or directing streams through pipes, and upstream modifications such as dams.

Riparian habitat (streamside vegetation) is very important to help maintain a healthy aquatic environment. Optimal riparian habitat is a mature vegetation zone at least 60 feet wide on both banks. Riparian vegetation is important because it:

- Provides a buffer zone that prevents sediment in runoff from entering the water.
- Provides roots to hold banks in place, preventing erosion.
- Provides habitat for fish and other aquatic life.
- Provides canopy that shades the stream or river. This shading keeps water temperatures down and prevents excessive algal growth, which in turn prevents large fluctuations in dissolved oxygen levels.
- Provides a food source for aquatic invertebrates that eat fallen leaves and for fish that eat insects that fall from trees.

TABLE 4: TYPES OF HABITAT ALTERATION

Habitat Alteration	Stream Miles Impaired
Alteration in stream-side or littoral vegetative cover	2,623
Other anthropogenic substrate alterations	425
Physical substrate habitat alterations	4,212

Note: Streams can be impaired by more than one type of habitat alteration – totals are not additive.

Pathogens

Pathogens are disease-causing organisms such as bacteria or viruses that can pose an immediate and serious health threat if ingested. Many bacteria and viruses that can be transferred through water are capable of causing serious or even fatal diseases. The main sources for pathogens are untreated or inadequately treated human or animal fecal matter.

Indicator organisms are used as water quality criteria to test for the presence of pathogens. Historically, Tennessee used total fecal coliform counts as the indicator of risk, but has revised criteria to comply with an EPA recommendation to shift to an *E. coli* - based criteria. The *E. coli* group is considered by EPA to be a better indicator of true human risk. Water quality criteria were revised to use *E. coli* in January 2004.

Currently, Tennessee has 48 streams and rivers posted with a water contact advisory due to high pathogen levels. There are 7,385 stream miles impaired by *E. coli*.

Problem concentrations of pathogens happen at different times in various streams across the state. High levels can be associated with rainfall events in urban areas with collection system problems and in rural areas with large concentrations of livestock with inadequate buffer zones adjacent to streams. *E. coli* can be elevated under low flows conditions also, especially in areas with failing or inadequate septic systems or places where livestock have direct access to streams.

Siltation/Suspended Solids

Silt is one of the most frequently cited pollutants in Tennessee, impacting almost 6,200 miles of streams and rivers. While some erosion is a natural process, tons of soil are lost every year as a result of human activities. Silt is generally associated with land disturbing activities such as agriculture and construction. Some of the significant economic impacts caused by silt are increased water treatment costs, filling in of reservoirs, loss of navigation channels and increased likelihood of flooding.

Siltation affects biological properties of waters by:

- Smothering eggs and nests of fish.
- Transporting other pollutants, in possibly toxic amounts, or providing a reservoir of toxic substances that may become concentrated in the food chain.
- Clogging the gills of fish and other forms of aquatic life.
- Covering substrate that provides habitat for aquatic insects, a main food source of fish.
- Reducing biological diversity by altering habitats to favor burrowing species.
- Accelerating growth of submerged aquatic plants and algae by providing more favorable substrate.

Siltation affects chemical properties of waters by:

- Interfering with photosynthesis.
- Decreasing available oxygen due to decomposition of organic matter.
- Increasing nutrient levels that accelerate eutrophication in reservoirs.
- Transporting organic chemicals and metals into the water column (especially if the original disturbed site was contaminated).

Siltation affects physical properties of waters by:

- Reducing or preventing light penetration.
- Changing temperature patterns.
- Decreasing the depth of pools or lakes.
- Changing flow patterns.

Preventive planning in land development projects can protect streams from silt and protect valuable topsoil. Best Management Practices (BMPs) such as the installation of silt fences and maintenance of trees and undergrowth as buffer zones along creek banks can prevent soil from entering the creek. Farming practices that minimize land disturbance, such as fencing livestock out of creeks and no-till practices not only protect water quality but also prevent the loss of topsoil.

A growing concern in Tennessee is the use of Off-Highway Vehicles (OHV) in or near streams. TDEC is working with commercial operators to design trail systems that minimize erosion and are protective of aquatic systems.

Nutrients

A common problem in Tennessee waterways is elevated nutrient concentrations. The main sources for nutrient enrichment are livestock, municipal wastewater systems, urban runoff, and improper application of fertilizers. Nutrients stimulate algae growth that produces oxygen during daylight hours, but uses oxygen at night, leading to significant diurnal fluctuations in oxygen levels. Waters with elevated nutrients often have floating algal mats and clinging filamentous algae. Elevated nutrients cause the aquatic life to shift towards groups that eat algae and can tolerate dramatic dissolved oxygen fluctuations. Nutrient pollution is difficult to control. Restrictions on point source dischargers alone may not solve this problem.

Some states have banned the use of laundry detergents containing phosphates. As a result, most commercially available detergents do not contain phosphates. Many fertilizers for crops or lawn application contain both nitrogen and phosphorus. If fertilizers are applied in heavy concentrations, rain will carry the fertilizer into nearby waterways.

TABLE 5: TYPES OF NUTRIENT IMPAIRMENTS

Nutrient	Stream Miles Impaired
Nutrient/Eutrophication	281
Biological Indicators	2,260
Total Phosphorus	1,600
Ammonia (un-ionized)	47

Note: Streams can be impaired by more than one type of nutrient – totals are not additive.

Sources

Sources of pollutants in streams and rivers include agricultural activities, hydrologic modification (channelization, dams, and navigation dredging), municipal discharges, construction, industrial discharges, and mining activities.

Some impacts, like point source discharges and urban runoff, are evenly distributed across the state, while others are concentrated in particular areas. For instance, channelization and crop production is most widespread in west Tennessee. Dairy farming and other intensive livestock operations are concentrated in the Ridge and Valley region of east Tennessee and in southern middle Tennessee. An emerging threat in middle Tennessee is rapid commercial and residential development around Nashville and other urban areas. Mining continues to impair streams in the Cumberland Plateau and Central Appalachian regions. Figure 6 illustrates the percent contribution of pollution sources in impaired rivers and streams.

FIGURE 6: PERCENT CONTRIBUTION OF POLLUTION SOURCES IN IMPAIRED RIVERS and STREAMS

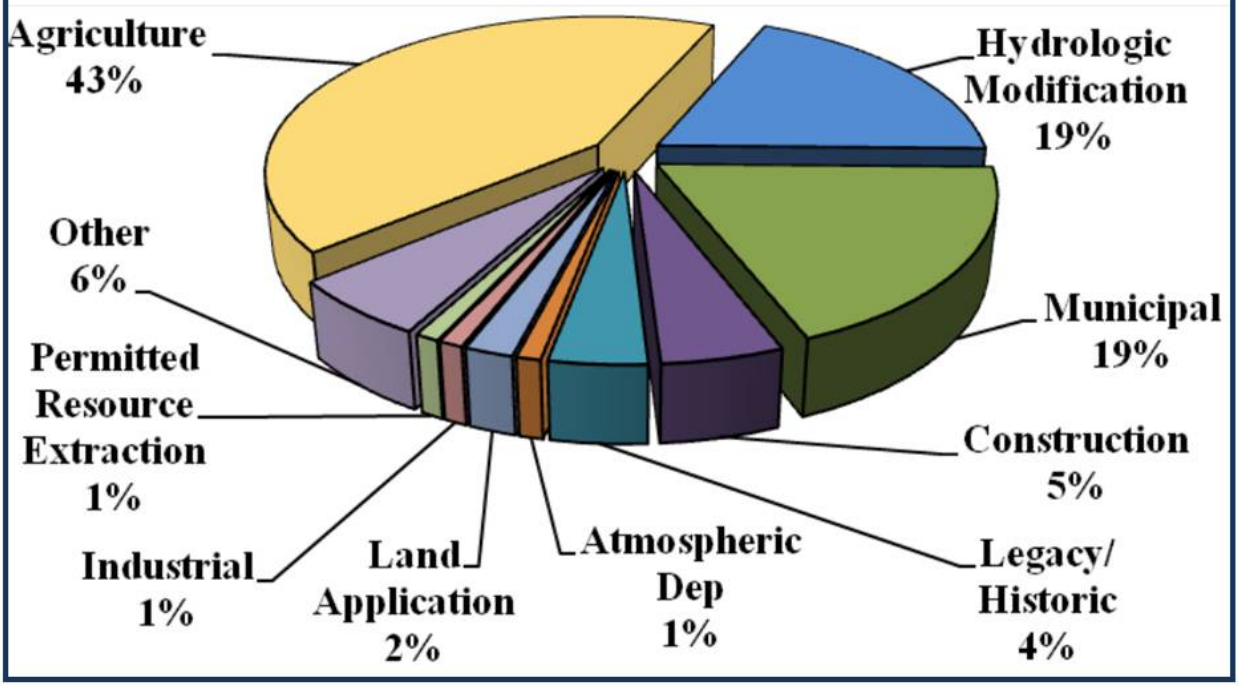


TABLE 6: TYPICAL SOURCES OF NONPOINT SOURCE POLLUTION IN RIVERS and LAKES IN TENNESSEE		
Sources Category*	**Total Impaired River Miles**	**Total Impaired Reservoir/Lake Acres**
Agriculture		
Specialty Crop Production	59	
Unrestricted Cattle Access	304	
Dairies (Outside Milk Parlor Areas)	15	
Irrigated Crop Production	47	
Grazing in Riparian or Shoreline Zones	6,057	481
Animal Feeding Operations (NPS)	240	34
Livestock (grazing or feeding)	7	
Non-irrigated Crop Production	3,026	15,587
Manure Run-off	1	
Hydrologic Modification		
Channelization	3,506	
Habitat Alterations (not directly relates to hydromodification)		
Stream Bank Modification/ Destabilization	67	
Loss of Riparian Habitat	13	
Drainage/Filling/Wetland Loss		10,950
Channel Erosion/Incision from Upstream Modification	12	
Legacy/Historical		
Abandoned Mine Lands (Inactive)	408	2,254
Silviculture		
Harvesting	72	
Land Application/Waste Sites		
On-site treatment systems (septic systems and similar)	359	4
Other Sources		
Off-Road Vehicles	60	
Hwy/Road/Bridge (runoff)	23	
Golf Courses	0.3	

Note: Rivers and reservoirs can be impaired by more than one source of pollutants. Data in this table should only be used to indicate relative contributions – totals are not additive.

Primary Sectors of Nonpoint Source Pollution in Tennessee

Agriculture

Introduction

Agriculture is Tennessee's largest industry. Tennessee farmers are stewards of the lands they farm, because their livelihood depends on it. Agricultural production alone, excluding forestry, generates more than $3.5 billion dollars annually in farm cash receipts. There are more than 10.8 million acres of farmland and an estimated 77,300 farms in Tennessee. We rank 8th in the nation for number of farms. The average farm size in the state is 140 acres.

Grain harvest in Hamblen County

Farmland accounts for over 41% of the total land area in Tennessee. There are water quality problems associated with some agricultural operations. Excessive soil erosion from row crop land, animal waste generated from Concentrated Animal Feeding Operations (CAFOs), livestock access to streams, improper grazing practices, and excessive pesticide usage are some of the problems that need to be addressed.

Description

Almost half of the land in Tennessee is used for agriculture. These activities contribute approximately 43 percent of the impaired stream miles in the state. Statewide, the largest single source of impacts is grazing of livestock, followed by crop production. In west Tennessee, tons of soil are lost annually due to erosion from crop production (mostly cotton and soybean). In middle Tennessee, cattle grazing and hog farms are the major agricultural activity and result in bank erosion, plus elevated bacteria and nutrient levels. In east Tennessee, runoff from feedlots and dairy farms greatly impact some waterbodies.

The Tennessee Water Quality Control Act does not give the division authority to regulate water runoff originating from normal agricultural activities such as plowing fields, tending animals and crops, and cutting trees. However, agricultural activities that may result in significant point source of pollution, such as animal waste system discharges from concentrated livestock operations, are regulated.

Tennessee has made great strides in recent years to prevent agricultural and forestry impacts. Educational and cost-sharing projects promoted by the Department of Agriculture, Natural Resource Conservation Service (NRCS) and University of Tennessee Agricultural Extension Service have helped farmers install Best Management Practices (BMP's) all over the state. Farmers have voluntarily helped to decrease erosion rates and protect streams and rivers by increasing riparian habitat zones and setting aside conservation reserves.

The division has a memorandum of understanding with the Tennessee Department of Agriculture (TDA). Under this agreement, the division and TDA will continue to jointly resolve complaints about water pollution from agricultural activities. When a problem is found or a complaint has been filed, TDA has the lead responsibility to contact the farmer or logger. Technical assistance is offered to correct the problem. TDEC and TDA coordinate on water quality monitoring, assessment, 303(d) list development, TMDL generation, and control strategy implementation.

A farm is defined, for purposes of this chapter, as a place which could sell $1,000 dollars of agricultural products annually. The top five agricultural commodities in Tennessee are: cattle, soybeans, broilers, corn and cotton.

The following table lists Tennessee's rank in U. S. agricultural production in 2011 and 2012:

TABLE 7: AGRICULTURAL PRODUCTION IN TENNESSEE

Livestock or Crop	**TN's US Ranking**	**Production**
Goats	2	121,000 head
Tobacco, All	4	45,363,000 pounds
Tomatoes, Fresh	4	1,045,000 centum weight
Hay, Other	4	3,906,000 tons
Snap Beans, Fresh	5	259,000 centum weight
Equine	6	142,000 head
Cotton, All	8	813,000 bales
Beef Cows	9	950,000 head
Broilers	14	190,300,000 head
Soybeans	17	40,000,000 bushels
Corn, Grain	17	96,285,000 bushels
Winter Wheat	24	21,390,000 bushels
Hogs, All	25	170,000 head
Cut Christmas trees, short rotational woody crops	26	166,542 trees cut
Milk Cows	30	50,000 head

A typical Tennessee Farm scene

Agricultural production varies geographically across Tennessee. The following table lists the top ten producing counties for each of the crops and livestock listed. These county estimates are for 2011.

TABLE 8: AGRICULTURAL COMMODITIES BY COUNTY IN TENNESSEE									
Rank	**All Cattle**	**Beef Cows**	**Milk Cows**	**All Tobacco**	**Corn**	**Cotton**	**Wheat**	**Soybeans**	**All Other Hay**
1	Greene	Greene	Greene	Robertson	Obion	Haywood	Gibson	Obion	Greene
2	Lincoln	Lincoln	McMinn	Macon	Gibson	Crockett	Robertson	Dyer	Maury
3	Bedford	Giles	Monroe	Montgomery	Weakley	Gibson	Haywood	Gibson	Bedford
4	Giles	Bedford	Marshall	Smith	Henry	Tipton	Weakley	Lauderdale	Washington
5	Maury	Lawrence	Loudon	Hawkins	Robertson	Fayette	Dyer	Weakley	Giles
6	Lawrence	Maury	Robertson	Greene	Carroll	Madison	Crockett	Tipton	Robertson
7	Wilson	Wilson	White	Stewart	Coffee	Lauderdale	Obion	Lake	Sumner
8	Washington	Sumner	Washington	Dickson	Dyer	Dyer	Henry	Robertson	Lincoln
9	White	White	Henry	Trousdale	Franklin	Carroll	Montgomery	Haywood	Rutherford
10	Sumner	Hawkins	Polk	Clay	Tipton	Hardeman	Lincoln	Henry	Lawrence

Hay bales in Middle Tennessee

FIGURE 7: TENNESSEE'S MAJOR REGIONS WITH COUNTY NAMES

The majority of the state's row crops (corn, cotton, soybeans and wheat) are grown on the flat, tillable land of **West Tennessee**.

Middle Tennessee is known for its rolling hills and lush pastures, which are perfect conditions for raising beef cattle.

Tobacco, goats and dairy cows are primarily found in the more uneven and mountainous terrain in **East Tennessee**.

Extent of problem

Tennessee's 2012, 303(d) List identifies waterbodies that do not fully support all of their designated uses. 43% of stream miles in Tennessee are impaired by agricultural activities. The 2012 303(d) List has identified these activities by the use of the following terms:

- Animal Feeding Area(s)
- Animal Feeding Operation(s) (NPS)
- Aquaculture
- Aquaculture (permitted)
- Concentrated Animal Feeding Operation (CAFO)
- Concentrated Animal Feeding Operation (permitted point)
- Confined Animal Feeding Operations (Nonpoint)
- Dairies
- Irrigated Crop Production
- Manure Runoff
- Non-irrigated Crop Production
- Pasture Grazing
- Pastureland
- Specialty Crop Production
- Unrestricted Cattle Access

With regards to pollutants from the activities listed above, there are three main areas of concern – sediment, nutrients, and pathogens.

In the State of Tennessee, sediment from agricultural activities contributes the most to degradation of Waters of the State. Sediment can be introduced into waterways from tillage crops, field erosion and soil loss, poorly livestock loafing lots and feeding areas, and from livestock accessing creeks and streams. Increased sediment load can have negative impacts on native wildlife, such as fish and freshwater mussels, as well as become problematic for drinking water supplies.

Nutrients, primarily nitrogen and phosphorus, also contribute to decreased water quality. Nutrients from agricultural activities can be introduced into surface water by the over application of fertilizer to cropland and mismanagement of animal wastes. Upon reaching lakes and streams, excessive nutrients can cause eutrophication, or algal blooms. These algal blooms can become toxic to fish and other aquatic life, and render waterways unsuitable for designated uses.

Agricultural practices can also contribute to pathogen loads in surface water. Livestock have a variety of zoonotic microbes (or pathogens that can cause diseases in humans as well as animals) in their manure. If the animal waste is mismanaged, contaminated runoff can reach creeks and streams, including recreational areas. Humans that come into contact with the pathogen, either by

direct contact (swimming) or indirect contact (consuming fish from the area), are at risk of severe illnesses such as *E. coli* O157:H7 and listeriosis.

TABLE 9: ACTIVITIES THAT LEAD TO AGRICULTURAL IMPAIRMENT	
Agricultural Source	**Stream Miles Impaired**
Grazing in Riparian Zone	6,057
Non-irrigated Crop Production	3,026
Unrestricted Cattle Access	304
Animal Feeding Operations	240
Specialty Crop Production	59
Irrigated Crop Production	47
CAFOs	32
Dairies (outside milk parlor areas)	15
Livestock (grazing or feeding)	7
Aquaculture (permitted)	4
Manure Run-off	1

Note: Pollutants in streams can come from more than one source – the totals are not additive.

Solutions

Water quality problems associated with agricultural operations are solved by the installation of appropriate best management practices (BMPs). Measurable water quality improvements are most likely to occur in smaller watersheds, where BMPs have been clustered together, or in a larger watershed where a large percentage of the landowners needing BMPs have had them installed. Additionally, programs that place tracts of land in long-term easements are very beneficial to the water quality of the watershed.

TDEC has a memorandum of understanding with TDA concerning water pollution activities. If a complaint is filed or found, TDA has the lead responsibility to contact the farmer. Technical assistance is then offered to correct the problem. So through this coordinating partnership, TDEC and TDA water pollution from agricultural activities is resolved.

TDEC also handles the permitting of CAFOs in the state. All CAFOs of a certain size must obtain a permit. This permit requires that all CAFOs have a properly designed waste handling system and a nutrient management plan for their operation.

NRCS standards are used for BMPs in Tennessee. Refer to the USDA NRCS Standard Practices for a comprehensive list of agricultural BMPs that are eligible for funding under the 319 program: http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/home/?cid=nrcs143_026849. There are a few other practices that the TN-NPS program considers eligible for grant funding that are in addition to NRCS practices. For a list of BMPs supported by the TN-NPS program, see Appendix B. In addition, the TN-NPS program will evaluate new and innovative technologies and BMPs as they become available.

In addition to the practices listed above, the TN-NPS program will consider funding new and innovative practices to decrease pollutants from agricultural activities on a case-by-case basis.

Here is a list of the top, current TN-NPS program BMPs designed to address pollutants from agricultural activities.

TABLE 10: TOP AGRICULTURAL BEST MANAGEMENT PRACTICES	
Practice (NRCS Code)	**Number of Areas with Practices Installed (from 200-2014)**
Heavy Use Area (561)	307
Watering Facility (614)	295
Fence (includes fencing for rotational grazing and livestock exclusion) (382)	263
Pipeline (516)	259
Pasture and Hay Planting (512)	120
Grade Stabilization Structure (410)	168
Streambank Protection (580)	117

Cooperating Partners

County and City Governments

Based on proposed rules of the EPA, the trading of point and nonpoint sources may become a reality in the near future. In this event, city and county governments that own point sources on 2012 303(d) listed waters may determine that a correction of the nonpoint source problems in the watershed is more cost effective that the addition of advanced treatment technology. This process is likely to involve the installation of BMPs on agricultural lands, and could be an additional source of revenue.

Soil Conservation Districts (SCDs) http://www.tn.gov/agriculture/water/sscc.shtml

Each of Tennessee's 95 counties has a Soil Conservation District Board of Supervisors, organized under the authority of TCA 43-14-201 et seq. Each board is comprised of five members, three elected members and two appointed members. The mission of the SCD board is to investigate the causes and effects of soil erosion in their district and seek cooperative relationships with other agencies and programs to eliminate all soil erosion in the district. The State Soil Conservation Committee gives guidance to the 95 districts.

Livestock Associations

There are several organizations in Tennessee that livestock producers associate with that will be a target for educational efforts. These associations have members that own lands where BMPs could be needed. The following is a partial listing of these groups:

- Tennessee Cattlemen's Association (TCA)
- Tennessee Dairy Producers Association (TDPA)
- Tennessee Poultry Association
- Tennessee Livestock Producers
- Tennessee Pork Producers Association (TPPA)

Tennessee Association of Resource Conservation and Development Councils (TN RC & D) http://www.tnrcd.org/index.php/councils
RC & D Councils are groups that help develop economic, natural, and social resources in Tennessee. Most counties are represented by an RC & D Council.

TDA- Agricultural Resources Conservation Fund (ARCF) http://www.tn.gov/agriculture/water/arcf.shtml
This program supplies approximately $3 million dollars annually to SCDs, RC&Ds and other organizations to cost-share with landowners on the installation of BMPs to eliminate sources of agricultural nonpoint source pollution. The source of the funds is a portion of the state's Real Estate Transfer Tax, with the controlling statute being TCA 67-4-409(l). Each SCD has been encouraged to adopt a procedure in their respective district to evaluate the watersheds of the district, and to prioritize them so a "worst watershed first" approach to funding can begin. The current guidelines for fund usage can be found at this link:

http://www.tn.gov/agriculture/forms/ARCFguidelines.pdf.

Additionally, projects for informing and educating landowners, producers and managers of agricultural operations are also funded annually.

Tennessee Department Environment and Conservation –Water Resources http://www.tn.gov/environment/water/
This agency administers the NPDES program in Tennessee, under the authority of The Water Quality Control Act, TCA 69-3-101 et seq. DWR has field staff located in eight regional environmental field offices that periodically respond to complaints which pertain to agricultural operations. Their focus is to determine if a point source of pollution is occurring at the site of the complaint. If the facility is a livestock operation, DWR and TDA have a Memorandum of Agreement established to solve these problems prior to the initiation of enforcement action. The goal is to educate the landowner about changes that need to be made in the operation to eliminate current problems and prevent future discharges.

Additionally, TDEC and TDA are cooperating to implement the provisions of the NPDES General Permit for CAFOs in Tennessee. TDA has approval authority for the waste handling system plans and the nutrient management plans for all CAFOs. TDEC is the permitting authority.

TDEC has been issued 319 (h) grants for monitoring nonpoint source pollution every year since 1996 except 2009. Their environmental field offices conduct biological, chemical, and bacteriological monitoring at sites known to have agricultural nonpoint source components. State Laboratory Services are subcontracted for all analytical work.

Tennessee Farm Bureau (TFB) http://www.tnfarmbureau.org/
Farm Bureau membership is represented on numerous water quality committees and task force assignments. The Public Affairs Department provides assistance to the agriculture representatives on these committees. These special committees are designed to solve problems or improve conditions in our state.

Tennessee Association of Conservation Districts (TACD) http://tnacd.org/

TACD was organized to advance the programs of the Soil Conservation Districts and promote the welfare of the people of Tennessee through the work of Conservation Districts. TACD encourages maximum cooperation between Districts and agencies of local, state and federal government in the development and conservation of renewable natural resources. TACD also encourages cooperation among Districts, individuals and various government agencies interested in resource development, which promotes an educational and informational program of soil and water conservation and watershed/flood prevention.

Tennessee Stream Mitigation Program (TSMP) http://tsmp.us/

The TSMP is a non-profit group that was created under the Tennessee Wildlife Resources Foundation. It is a statewide program that does stream restoration projects by improving riparian zones, improving water quality, and helping eroding streambanks.

Tennessee Valley Authority (TVA) http://www.tva.gov/

TVA is a wholly owned U.S. government corporation established by the TVA Act of 1933. TVA provides power to the Tennessee Valley by balancing the competing needs of power supply, flood control, navigation, land use, water quality, and recreation. They manage 480,000 acres of lakes, 11,000 miles of public shoreline, and 650 miles of navigable river, as the Nation's fifth-largest river system. TVA leases lands under their ownership to farmers for agricultural purposes. They also have established watershed teams to focus local efforts on improving the water quality of the Tennessee Valley. TVA staff regularly monitor ecological conditions of reservoirs and streams, in an effort to protect water quality without limiting the river system's use. Recent changes within the funding structure of TVA have permitted them to use their operating funds to match 319 funds.

Tennessee Wildlife Resources Agency (TWRA) http://www.tn.gov/twra/

This agency is active in creating and restoring wildlife habitat across Tennessee. Projects that involve the restoration of riparian habitat can, and often do, include cooperating with farmers and rural landowners to establish buffer zones and other BMPs on agricultural lands.

Unites States Fish and Wildlife Agency (USFW) http://www.fws.gov/

The USFW has provided funds to the Tennessee Department of Agriculture through their Partners for Fish and Wildlife fund. This money has been spent on water quality BMPs that also have benefits for wildlife habitat.

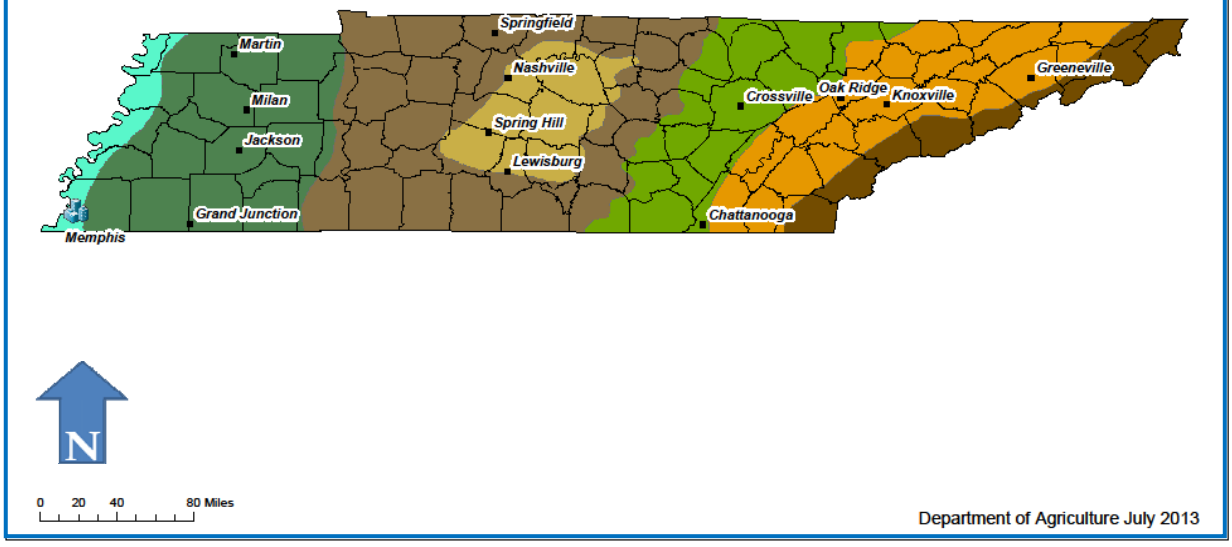
USDA Farm Services Agency (FSA) http://www.fsa.usda.gov/FSA/

The Conservation Reserve Program (CRP) is administered by the FSA . The Natural Resources Conservation Service (NRCS) determines land and practice eligibility, ranks and scores the offers based on environmental benefits, and develops the contract with the applicant. There have been 19 sign-ups to date, including three continuous sign-ups for "environmental" practices. In Tennessee, the environmental practices (1) grassed waterway; (2) shallow water for wildlife; (3) contour buffer strips; (4) filter strips; and (5) forested riparian buffer are automatically accepted into the program when determined to be eligible. All other practices are standard, and applicants must compete to be accepted into the program.

USDA Natural Resource Conservation Service (NRCS)
http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/
NRCS is the largest conservation agency in Tennessee. They manage many programs to assist landowners with the task of improving their operations to protect the quality of Tennessee waters. The following is a listing of their conservation programs.

University of Tennessee, Institute of Agriculture (UTIA)
https://ag.tennessee.edu/Pages/default.aspx
The College of Agricultural Sciences and Natural Resources, the Agricultural Research and Education Center, and the Agricultural Extension Service, including Ag and Biosystems Engineering, collectively known as the Institute of Agriculture, provide instruction, research, and public service in agriculture and related areas to students, producers, and consumers in Tennessee and secondarily to the region, nation, and world. The Institute contributes to improving the quality of life, increasing agricultural productivity and income, protecting the environment, promoting the economic well-being of families, and conserving natural resources for all Tennesseans. The clientele served includes students, farmers, homemakers, 4-H and other youth, agribusiness, state and federal governmental agencies, consumers, and the general public.

FIGURE 8: UNIVERSITY OF TENNESSEE RESEARCH and EDUCATION CENTERS



Major Accomplishments

McKnight Branch, delisted stream, improved water quality and reduced siltation with BMPs.
Pasture grazing along Tennessee's McKnight Branch contributed to damaged riparian areas, increased stream siltation, and habitat alteration, prompting the Tennessee Department of

Environment and Conservation (TDEC) to add the stream to the state's Clean Water Act (CWA) section 303(d) list of impaired waters in 2000. Project partners implemented agricultural best management practices (BMPs) that reduced siltation and improved water quality. As a result, TDEC removed McKnight Branch from the state's CWA section 303(d) list of impaired waters in 2010.

http://water.epa.gov/polwaste/nps/success319/tn_mcknight.cfm

A portion of McKnight Branch where the riparian zone has been left undisturbed.

Goals for Agriculture

Annual Goals and Long Term Goals, specific to agriculture, have been identified. The Annual Sector-Specific Goals for agriculture focus on incremental improvements to water quality through the reduction of pollutant loads from farming, ranching, and other livestock activities. Short Term Goals are designed to be achievable within one year. Planning Years 1 – 2 will be used to develop more intensive/sector-specific tracking mechanism, as well as establish baseline data for later comparisons. This is true for many of the sectors discussed.

The Sector-specific Long Term Goals for Agriculture are described below. The Agriculture Long Term Goals are extensions of the Annual Goals, and are supported by successful completion of the Annual Goals' Measurements of Success.

TABLE 11: AGRICULTURAL SECTOR GOALS			
Long Term Goal	**Parties Involved**	**Annual Goals**	**Outcome**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	TN-NPS Partners	• Fund no less than 3 projects each year that address agricultural sources of NPS pollution, depending on the number and quality of proposals received. • Fund the implementation of no less than 65 agricultural BMPs per year. • Staff Watershed Coordinators will perform no less than 200 site visits each year to inspect BMPs pre-, during-, and post-construction.	• Improve water quality by reducing water quality impacts from pasture grazing, row crop farming, etc. • Prevent erosion/soil loss from pastures/ row crops.
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	TN-NPS Applicants Stakeholders	• TN-NPS staff will attend/participate in at least 4 educational events each year targeting an agricultural audience. • Fund at least 5 educational events targeting an agricultural audience. • Document at least 600 citizens presented with messages addressing NPS pollution sources, problems, and solutions. • Respond to 100% of Animal Feeding Operations complaints . • Direct AFO owner/operators to NRCS for mitigation, as necessary.	• Increase awareness of agricultural nonpoint source impacts.

TABLE 11: AGRICULTURAL SECTOR GOALS			
Long Term Goal	**Parties Involved**	**Annual Goals**	**Outcome**
Long Term Goal No. 3: Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	TN-NPS Stakeholders Partners	• TN-NPS staff will attend at least 8 stakeholder meetings each year to promote the TN-NPS program and recruit and cultivate new partners for future projects. • TN-NPS program will conduct an annual survey of partners, seeking their input for ways our program can improve and better meet existing needs. • TN-NPS staff will provide assistance (as requested) in writing Watershed Based Plans; particularly map-making and load reduction estimates. • TN-NPS program will improve information and tools available on our website to aid in the writing of Watershed Based Plans.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of agricultural nonpoint source impacts. • Educate producers regarding sound animal management practices to prevent or minimize nonpoint source pollution from AFOs.
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	TN-NPS	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	• Increase knowledge of effective and efficient sector-specific BMPs and improve measures of success tracking.

TABLE 11: AGRICULTURAL SECTOR GOALS			
Long Term Goal	**Parties Involved**	**Annual Goals**	**Outcome**
Long Term Goal No. 5: Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	TN-NPS Partners	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	• Not applicable.
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	TN-NPS	• Not Applicable - grant award obligations are not defined by pollutant sector.	• Not applicable.

Forestry/Silviculture

Introduction

Forestry or silviculture is the care and cultivation of forest trees. According to *Webster*, silviculture comes from the Latin word *silva* (forest) and *culture* (culture). In the state of Tennessee, the Division of Forestry is part of the Tennessee Department of Agriculture. In fact, the Division of Forestry (DF) is celebrating 100 years of service. On September 1, 1914, forestry began in Tennessee to control wildfires and reforest the land. Now, there is still a focus on wildlife control along with promoting "forestland values and benefits, forest health and forest productivity."

"The ultimate goal of TDF BMP programs is to assure clean water in association with timber harvest activities" from "Implementation of Forestry Best Management Practices in Tennessee", 2009.

Description

The beauty, wildlife habitat, timber production, recreation, enhanced property values, storm water control, and natural heritage are all important reasons why Tennessee's forests are so important to the state. Forests cover more than half the land in Tennessee, which is about 14 million acres.

Current duties performed by TDA-DF:

Forest Protection: Working to reduce loss from wildfires and forest pests and preventing water quality degradation during forestry operations. Tennessee grows twice as many trees as are harvested each year. That is 300,000 more forested acres today than in 1961.

Rural and Urban Forest Resource Management: Emphasis on promoting and advancing forest management on nonindustrial private forestland and helping to improve and maintain urban forest resources.

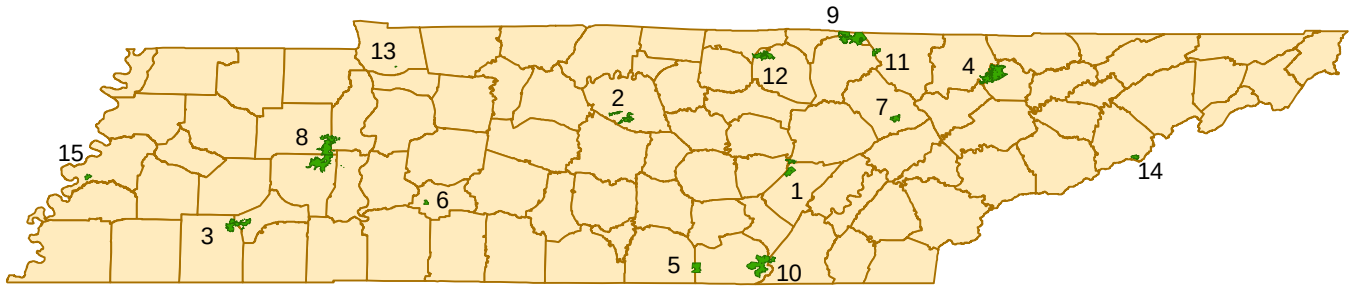
State Forest Management: Managing State Forest lands.

Reforestation: Providing quality and affordable tree seedlings to Tennessee landowners.

Forest Businesses: Assisting landowners and business people to help keep the forest healthy and help in marketing timber and wood products. Tennessee has a $21 billion forestry business hiring 101,891 jobs. The paper industry accounts for $5 billion dollars of the total. Tennessee's paper industry is also the largest consumer of recycled material in the state. Timber sales were $288 million dollars in 2010 and Tennessee ranked 5th in the nation in hardwood production.

There are 15 state forests in Tennessee. They range in size from 1,287 (Lewis State Forest) to 36,642 acres (Natchez Trace State Forest). They are located throughout the state from east to middle and west Tennessee.

FIGURE 9: TENNESSEE STATE FORESTS



1. Bledsoe
2. Cedars of Lebanon
3. Chickasaw
4. Chuck Swan
5. Franklin
6. Lewis
7. Lone Mountain
8. Natchez Trace
9. Pickett
10. Prentice Cooper
11. Scott
12. Standing Stone
13. Stewart
14. Martha Sundquist
15. John Tully

N

0 25 50 100 Miles

Tennessee Department of Agriculture
May 20, 2013

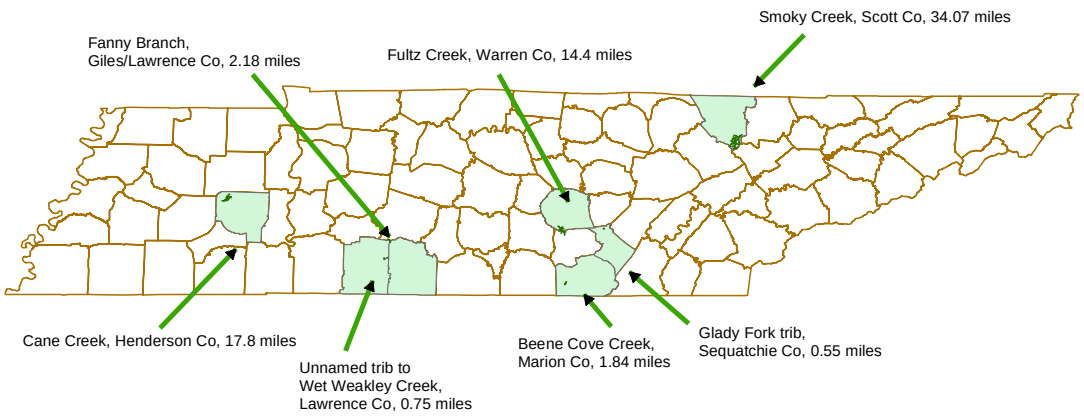
Tennessee State Forest Lands
Tennessee Counties

Extent of the Problem

In the state of Tennessee, there is no regulatory authority over agricultural and forestry activities. They are exempt from getting permits for certain activities. It is the practice in the state to work with groups directly to install appropriate BMPs and to provide technical assistance.

Tennessee only has 72 total impaired river miles due to silviculture harvesting. These streams are listed as impacted by silviculture/harvesting on the 2012 303(d) list.

FIGURE 10: COUNTIES WITH STREAM SEGMENTS OF SILVICULTURE IMPACTS IN TENNESSEE



Solutions

Tennessee continues to have great success in preventing forestry impacts to its waters. Here are some of the ways in which the state goes about managing forest activities and keeping streams and rivers free from pollution caused by forestry activities.

- Forest Inventory Analysis
- Statewide Forest Resource Assessment utilizing GIS
- Forest Stewardship Initiative
- Education for loggers and landowners through the Master Logger Program

The 319 Program has been instrumental in funding educational programs to help prevent soil erosion and water pollution caused by forest activities. The Tennessee Master Logger Program is one of those programs funded by Tennessee's 319 grants.

Since 2006, Tennessee has trained 1,950 loggers in the Master Logger Program. The Tennessee Master Logger Course (TML) includes 40 hours of training and each graduate must attend a continuing education class every two years after graduation to keep up with their Master Logger Status. The program and its graduates help deter "wildcat" logging operations in the state. Usually if a non certified logging group or individual is found logging improperly or being a "bad actor," people will turn these "bad actors" in and operations will shut down or not even get started.

Landowner education is done as well. This program helps landowners become good forest stewards with community meetings, on-site visits, BMP recommendations, and forest management plans.

From 2004 to 2011, a project entitled *Forestry Water Quality Best Management Practices Education & Technical Assistance* was paid for each year with TN-NPS funds. Beginning in 2012, this project has been paid for each year with money from the Agricultural Resource Conservation Funds (ARCF). The TDF will be utilizing this project as a core element of its water quality program. Two full-time water quality forester positions depend upon this grant funding for financial support. These personnel are key to the education of loggers and forest landowners, as well as providing technical guidance on the ground. Steps to achieve the program objective include:

1. Educate the forestry community regarding the use of BMPs.
2. Provide technical assistance concerning BMP application.
3. Monitor use of Forestry BMPs.
4. Assist other agencies in resolving water quality problems.

Cooperating Partners

Tennessee Department of Agriculture Division of Forestry (TDA -TDF)
http://tn.gov/agriculture/forestry/

TDA-TDF is housed at the Ellington Agricultural Center in Nashville Tennessee. The main focus of TDA-TDF is forest conservation, and protecting and enhancing Tennessee's forests. Rural and urban forest resource management, reforestation of the state through tree seedlings, and forest business assistance are keys to the program.

Tennessee Forestry Commission
http://www.tn.gov/agriculture/forestry/forestrycommission.shtml

The Tennessee Forestry Commission serves as an advisory council to the Tennessee Department of Agriculture and the governor. The commission advises on forestry policy and it was started in 1985. Members represent the following interests: Owners of greater than 500 acre, owners of less

than 500 acres (2 positions), hardwood manufacturers, pulp and paper manufacturers, conservation organizations, the public at large, the Commissioner of the Tennessee Department of Agriculture, the Director of the Tennessee Wildlife Resources Agency, and the Commissioner of the Tennessee Department of Environment and Conservation.

Functions of the commission include approving an annual budget for the Division of Forestry, preparing an annual report for the House and Senate committees in the state legislature, and recommending prices for forest seedlings, among other things.

Tennessee Forestry Association (TFA) http://www.tnforestry.com/

Memorandum of Understanding (MOU) with TDF Years 1990 – 2011, included are Forestry BMP Training and Education Projects, including Master Logger Program and Landowner Education. Location: Privately owned forest lands across Tennessee.

Tennessee Department of Environment and Conservation (TDEC) http://www.tennessee.gov/environment/

TDEC works with TDA-TDF on abating forest related impacts to streams and soils. Since 1995 they have had a memorandum of agreement (MOA) that has been effective in addressing water quality complaints and pollution from silvicultural activities. TDA-TDF had the role of providing assistance in installing and maintaining BMPs. TDEC's role is to administer and enforce the Tennessee Water Quality Control Act.

The University of Tennessee Institute of Agriculture (UTAES) https://utextension.tennessee.edu/Pages/default.aspx

The UTAES specializes in reaching and educating forest landowners about silvicultural BMPS. They also help landowners work with professional foresters to improve timber harvesting operations.

Major Accomplishments

Along with the 2012 303(d) list of impacted streams, is Appendix A of the document. Appendix A contains a listing of stream segments that were on the previous 2010 list and have been removed for reasons relating to water quality. Examples of where restoration activities have improved or reversed impacts to streams where logging or silvicultural activities took place are below. Such findings are evident through stream surveys and biological monitoring studies:

Roberts Creek, Humphreys County, 4.4 miles due to Siltation and Physical Substrate Habitat Alterations from Silviculture and Harvesting/Residue Management. Reason for Delisting: This stream was listed after forestry clearcut without proper BMPs. This stream was re-surveyed in 2008 at mile 1.0 (Sycamore Road). This biorecon documented 12 EPT families, 7 intolerant, and 20 total families for the perfect score of 15. The stream appears to have improved.

Jack Branch, Humphreys County, 1.0 miles due to Siltation and Alteration in stream-side cover from Silviculture and Harvesting/Residue Management. Reason for Delisting: This stream was

listed after forestry clearcut without proper BMPs. This stream was re-surveyed in 2008 at mile 0.4 (Cuba Landing Road). This biorecon documented 10 EPT families, 7 intolerant, and 16 total families for the good score of 13. The stream appears to have improved.

North Fork Blue Creek, Humphreys County, 7.4 miles due to Siltation and Alteration in stream-side cover from Silviculture and Harvesting/Residue Management. Reason for Delisting: This stream was listed after forestry clearcut without proper BMPs. This stream was re-surveyed in 2008 at mile 0.5 (I-40). The stream appears to have improved.

Tanyard Creek, Humphreys and Perry County, 2.1 miles due to Siltation and Substrate Habitat Alterations from Road Construction/Maintenance and Silviculture. Reason for Delisting: This stream was impacted by the construction of a road for forestry activities without proper BMPs The effects and restoration activities have reversed the impacts to the stream.

Other Major Accomplishments in Forestry TDA:

- Completed, published and distributed Best Management Practices implementation Survey
- Conducted 764 on-site visits with landowners and loggers, providing technical assistance concerning application of BMPs, 636 of which were courtesy checks.
- Prepared 1,164 written BMP recommendations for forest landowners in forest management plans and through timber sale assistance by Area Foresters.
- Presented 19 BMP sessions in cooperation with the Tennessee Forestry Association (TFA) for the Tennessee Master Logger program, training 357 loggers who received scholarships funded through the Tennessee Agricultural Enhancement Program, in partnership with the TFA.
- Conducted 58 forestry water quality and BMP familiarization and training workshops for 1,409 resource managers, forest landowners, and loggers.
- Investigated and made recommendations on 109 complaints from other sources, 13 in cooperation with TDEC Division of Water Resources.

Goals for Forestry/Silviculture

The Long Term Goals and Annual Goals identified for the Forestry/Silviculture sector are indicated in the table on the following pages.

TABLE 12: FORESTRY SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Outcome**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	TN-NPS Partners	• Fund no less than 1 forestry-based project each year, depending on the number and quality of proposals received. • Fund the implementation of no less than 5 forestry BMPs each year, depending on the number of active forestry restoration projects.	• Improve water quality by reducing water quality impacts from logging, timber planting, access road construction, stream crossings, etc. associated with forestry practices.
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	TN-NPS Applicants Stakeholders	• TN-NPS staff will attend/participate in at least 1 educational event each year targeting a forestry audience. • Fund at least 3 educational events each year targeting a forestry audience, depending on the number of active projects aimed at forestry issues. • Document at least 200 citizens presented with messages addressing NPS pollution concerns stemming from forestry-related activities.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of forestry nonpoint source impacts.

TABLE 12: FORESTRY SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Outcome**
Long Term Goal No. 3: Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	TN-NPS Stakeholders Partners	• TN-NPS staff will attend at least 1 stakeholder meeting (e.g., TN Forestry Association or the TN Urban Forestry Council) each year to promote the TN-NPS.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of forestry nonpoint source impacts. • Educate producers regarding sound forestry management practices to prevent or minimize nonpoint source pollution from forestry/silviculture.
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	TN-NPS	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	• Increase knowledge of effective and efficient sector-specific BMPs and improve measures of success tracking.

TABLE 12: FORESTRY SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Outcome**
Long Term Goal No. 5: Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	TN-NPS Partners	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	• Not applicable.
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	TN-NPS	• Not Applicable - grant award obligations are not defined by pollutant sector.	• Not applicable.

Urban Opportunities

Introduction

This chapter conveys the local, state, and federal agency, as well as the private sector commitment to protect and improve the quality of surface and ground water impaired by construction activities. It will focus on the following construction activities: land disturbing activities; road, bridge, and culvert construction activities; and utility line construction and maintenance. The Middle Tennessee area has seen and is still in as of 1st quarter 2014, a state of rapid commercial and residential growth and development. These areas in Nashville, Williamson Counties and other middle Tennessee counties are seeing more and more impacts to rivers, streams, and wildlife.

Description

The populations of many Tennessee communities have rapidly expanded in the last decade. The construction of subdivisions, shopping malls, and highways can harm water quality if the sites are not properly stabilized. The impacts most frequently associated with land development are silt and habitat alteration. Construction sites must obtain coverage under the state's general NPDES permit for construction stormwater runoff if clearing, grading or excavating is planned on any site larger than one acre or any disturbance of less than one acre if it is part of a larger common plan of development or sale.

In addition, local stormwater control programs and regulations have been helpful in controlling water quality impacts from land development. MS4 Phase I cities (Memphis, Nashville, Chattanooga, and Knoxville) already have construction stormwater control programs in effect. The 78 cities and counties covered under the Phase II MS4 general permit have developed construction stormwater control programs. In these cities, local staff help identify sources of stormwater runoff and develop control strategies.

Extent of the Problem

Nonpoint source pollution (NPS) is generally considered to be a diffuse source of pollution not associated with a specific point of entry into the water body. Point sources are defined as any discernible, confined, and discrete conveyance from which pollutants are or may be discharged. Urban runoff is unique, in that most of the sources are the result of nonpoint influences. However, the conveyances to the surface waters are generally point sources.

Nonpoint sources of pollution include sediment from small construction sites, metals and other contaminants washed from streets and/or fertilizers or pesticides washing from lawns. The runoff becomes a point source because storm sewers, which are not connected to wastewater treatment plants, collect the runoff and convey it to surface waters.

Urban centers in Tennessee are typically located near surface water. In most cases, there are one or more streams flowing through our cities. Protecting these streams is a major challenge and becomes more critical as cities experience population increases.

Urban pollution presents some difficult problems. Pollutants accumulate during the time between rainfall events or before snowmelt. When rain falls or snow melts in the urban environment there is a sudden introduction of pollutants into lakes, rivers, wetlands, and groundwater; commonly known as the "first flush" effect.

Erosion from unprotected soil and siltation from land disturbing activities such as residential, commercial, and industrial construction, road, bridge, and culvert construction are major contributors of NPS pollution. The most common effects of construction on the waters of the state are siltation and habitat alteration. Construction activities convert farmlands and forested areas into roads, housing developments, and shopping centers. When this occurs in a given watershed, the amount of impervious surface area of the watershed greatly increases. This means that when it rains, there is less land area available for the rain to soak into, so runoff increases. For any given rainfall event, the quantity and speed of the water running to streams dramatically increases.

Problems that occur due to urban runoff issues for streams and rivers are increased pollutant loadings, more flooding issues, larger impervious surface areas, greater quantities of water flowing in streams, and rapid and changing flow in streams. In the case of heavy rain events, sanitary sewer collection systems can overflow leaving discharges of sewage in streams or river. There is concern that in urban areas children might be exposed to elevated levels of bacteria while playing in streams or rivers after a heavy rain.

Solutions

The efforts in Tennessee have been focused upon the installation of BMPs, and training of professionals to utilize BMPs in large-scale operations. While some overlap exists between this chapter and the hydrologic modification and urban runoff chapter, it is important to include those items as they pertain to construction. Other problems include dust generation and its deposition on roadways and highways near construction sites. For a complete list of all BMPs supported by the TN-NPS programs see Appendix B.

Sediment is the most common form of pollution washed from work sites, creating multiple problems once it leaves the site. Sediment not only harms fish and aquatic life, but also can increase the risk of flooding by blocking storm drains and gutters. Sediment also can carry with it pollutants from construction sites. The obvious solution is to stop or reduce runoff contamination from the construction site before it begins. Very few construction problems have only one solution. Most sites need a number of Best Management Practices (BMPs) applied to them. These combination BMPs are often the most effective. Other solutions include educating the public, as well as training the construction contractor.

TABLE 13: TOP URBAN BEST MANAGEMENT PRACTICES	
Practice (NRCS Code)	**Number of Areas with Practices Installed (from 200-2014)**
Rain Garden (007)	5
Native Grass Garden (008)	1
Urban Wetlands (658, 659)	4
Constructed Wetlands (656)	4
Urban Filtration Basin (906)	2
Wetland Restoration (657)	1
Urban Grassed Swale (907)	1
Urban Stormwater Wetland (911)	1
Urban Stormwater Treatment Device (914)	1
Urban Wet Pond (913)	2

Cooperating Partners

Multiple Cities and Counties across the state

Cities and counties can help tremendously with urban water practices, especially stormwater nonpoint source pollution. Many have education initiatives and host meetings for communities and community leaders. Such meetings with stakeholders allow for new partnerships and strengthen the focus on nonpoint source pollution solutions for the community. Many also incorporate their urban parks as partners and help with events, clean up, demonstrations, native grass planting and rain gardens.

Cumberland Region Tomorrow (CRT) http://www.cumberlandregiontomorrow.org/
CRT is a private, non-profit, citizen-based regional organization working with the Greater Nashville Regional Council and others in the public sector, dedicated to future planning in a 10 county region in Tennessee.

Tennessee Valley Authority (TVA)
http://www.tva.gov/river/watersupply/responsibilities.htm
TVA's Growth Readiness program provides training workshops for smart growth watershed protection. It encourages and helps communities learn about land-use decisions that affect water quality.

University of Tennessee – Water Resources Research Center (TNWRRC)
http://isse.utk.edu/wrrc/index.html
TN WRRC is the state's research institute dedicated to connect water-resource experts in academia, government, and private groups to address issues with water-related problems. The institute is supported in part by the U.S. Geological Survey.

Various state and local non-profit organizations – These organizations are an immense help in rallying groups of communities and people together for watershed restoration projects that bring better water quality for their areas of the state. They have the expertise and knowledge of

conservation strategies to make a major impact for the better in watersheds. Their goals are preservation and restoration of stream ecosystem. Examples of these organizations are

The Nature Conservancy (TNC)
http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/tennessee/index.htm
Cumberland River Compact (CRC) - http://cumberlandrivercompact.org/
Harpeth River Watershed Association (HRWA) – http://www.harpethriver.org/
Obed River Watershed Community Association (ORWCA) – http://www.obedwatershed.org/
Boone Watershed Partnership (BWP) – http://boonewatershed.com/
Middle Nolichucky Watershed Alliance (MNWA) - http://www.mnwa-tn.org/
Little River Watershed Association (LRWA) - http://www.littleriverwatershed.org/
Red River Watershed Association (RRWA) – http://redriverwatershed.org/

Major Accomplishments

From 319 Success Stories: West Sandy Creek

Diverse Best Management Practices Control Urban and Agricultural Runoff

High nutrient concentrations from agricultural runoff, loss of biological integrity as a result of siltation, and habitat loss from streamside alteration caused Tennessee to put a 15-mile segment of West Sandy Creek on its 303(d) list of impaired waters in 2002 and 2004. Sources included agriculture use, bank and shoreline modification, and **runoff from urbanized areas**. To help address the problems, the Henry County Soil Conservation District (District) implemented 10 best management practices (BMPs), including grade-stabilization structures, water/sediment control basins, terrace construction, and hay and pasture plantings. The BMPs improved the water quality in the 15-mile segment, which was removed from the 2006 303(d) list of impaired waters. A link to the Success Story for West Sandy Creek is below:

http://water.epa.gov/polwaste/nps/success319/tn_westsandy.cfm

Community education by helping to modify homeowner behavior in applying water conservation practices has been another major accomplishment. By involving landowners, this can have a large impact on reducing nonpoint source pollution.

In the case of the Lower Clinch River Watershed, their goal is to install 1,000 rain gardens throughout the watershed. More efforts, education, and application of urban best management practices such as rain gardens, green roofs, and native grass gardens are goals to meet.

Goals for Urban Activities

The Long Term Goals and Annual Goals that have been identified by the TN-NPS Program for urban activities can be found on the following table.

TABLE 14: URBAN SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	TN-NPS Partners	• Fund no less than 2 projects focused on stormwater issues in developed areas each year, depending on the number and quality proposals received. • Fund no less than 12 stormwater BMPs each year, depending on the number of active urban/suburban restoration projects. • Staff Watershed Coordinators will perform no less than 15 site visits each year to inspect various stormwater BMPs pre-, during-, and post-construction.	• Improve water quality by reducing water quality impacts from urban nonpoint sources.
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	TN-NPS Applicants Stakeholders	• TN-NPS staff will attend/participate in at least 3 educational events each year targeting an urban/suburban audience. • Fund at least 10 educational events each year targeting an urban/suburban audience, depending on the number of active projects aimed at urban/suburban. • Document at least 1,000 citizens presented with messages addressing NPS pollution concerns stemming from stormwater in urban/suburban areas.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of urban nonpoint source impacts.

TABLE 14: URBAN SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 3: Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	TN-NPS Stakeholders Partners	• TN-NPS staff will attend at least 2 stakeholder meetings each year to promote the TN-NPS program. • TN-NPS staff will attend the annual meeting of the Tennessee Stormwater Association (TNSA) each year.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of urban nonpoint source impacts. • Educate citizens regarding management practices to prevent or minimize nonpoint source pollution from urban inputs.
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	TN-NPS	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	• Increase knowledge of effective and efficient sector-specific BMPs and improve measures of success tracking.
Long Term Goal No. 5: Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	TN-NPS Partners	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	• Not applicable.

TABLE 14: URBAN SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	TN-NPS	• Not Applicable - grant award obligations are not defined by pollutant sector.	• Not applicable.

Failing Septic Systems

Introduction

With the exception of metropolitan areas around the cities of Memphis, Nashville, Chattanooga, and Knoxville, the State of Tennessee remains a highly rural state. In remote areas, or areas without an incorporated government, centralized utility districts, etc., residents and businesses rely on septic systems to manage liquid wastes. Septic Systems contribute to water quality problems in various ways. Wastewater in failing septic tanks can leak into the ground causing water contamination.

Description

There are approximately 1.2 million septic systems in the state of Tennessee. The state requires that owners set their systems back from streams to protect water.

There are approximately 2-5000 repairs/year in the state. Each repair requires a permit. The Tennessee Department of Environment and Conservation Division of Water Resources Septic Tanks & Decentralized Systems regulates septic systems. This includes new conventional and alternative subsurface sewage disposal systems and the repair of systems.

According to the 2012 305 (b) Report, Tennessee has 359 miles and 4 lake acres impaired by on-site treatment systems (septic systems and similar). Other land application of wastewater biosolids (non-agricultural) account for 9 stream miles impacted.

Extent of the Problem

Land Application/Waste Sites

Solid waste and septic systems contribute to water quality problems in various ways. Solid waste in landfills can leach into groundwater and surface water if not prevented. Wastewater in failing septic tanks can leak into the ground causing water contamination. Treated wastewater and sludge are applied to land as fertilizers and can be washed into streams causing nutrient loading. Another concern is the use and maintenance of underground storage tanks that can contain substances like petroleum products, solvents, and other hazardous chemicals and wastes. These can leak into the groundwater and may reach the surface water.

Bacteriological Contamination

About 176 river miles are posted due to bacterial contamination. No reservoirs or lakes are posted due to bacterial contamination. The presence of pathogens, disease-causing organisms, affects the public's ability to safely swim, wade, and fish in streams, rivers and reservoirs. Bacteria, viruses, and protozoa are the primary water-borne pathogens in Tennessee. Improperly treated human wastes from such sources as failing septic tanks, collection system overflows and improper connection to sewer or sewage treatment plants are the reasons behind 62 percent of the posted river miles. The remaining stream miles are posted due to other sources such as failing animal waste systems or urban runoff.

The division's current water quality criterion for bacteria is based on levels of E. coli. While this test is not considered direct proof of human health threats, it can indicate the presence of water-borne diseases. Research is underway to find better indicators of risk and to differentiate between human and animal sources of bacteria. The presence of prescription medicines, caffeine, and hormones in water has been suggested as potential markers for contamination by human waste.

Stream Miles Posted for Pathogen Contamination: 35% Collection System Failure/Leaking Sewer; 30% Urban Runoff/Storm Sewer; 17% Septic Tank Failure; 8% Sewage Treatment Plant; 7% out-of-state sources & 2% Agriculture.

1.4 miles of Cash Hollow Creek in Washington County is listed for septic tank failures in East Tennessee. There is a bacteriological advisory in affect for the stream. Little Pigeon River, river mile 0.0 to 4.7 in Sevier County is also posted for bacteria contamination. There are improper connections to storm sewers, leaking sewers, and failing septic tanks. Also in Cocke County are Johns Creek, 5 miles, Baker Creek, the entire stream at 4.4 miles which are impacted. The West Prong of the Little Pigeon River miles 0.0 to 17.3 are impacted by improper connections to storm sewers, leaking sewers, and failing septic tanks in Sevier County, Tennessee

The entire stream of the following are impacted by improper connections to storm sewers, leaking sewers, and failing septic tanks in Sevier County, Tennessee:

- Beech Branch, 1.0 mile
- King Branch, 2.5 miles
- Gnatty Branch, 1.8 miles
- Holy Branch, 1.0 mile
- Baskins Branch, 1.3 miles
- Roaring Creek, 1.5 miles
- Dudley Creek, 5.7 miles

In Grundy County failing septic tanks in Tracy City attribute to 3.7 miles of upstream natural area to Grundy Lake of the Little Fiery Gizzard being posted for bacteria contamination.

Solutions

Make sure septic systems are maintained and functioning properly. The Tennessee Department of Environment and Conservation's Division of Water Resources regulates the permitting of new conventional and alternative subsurface sewage disposal systems and the repair of systems that have failed to function properly. The Division grants approval for such systems where there is not city or municipal wastewater treatment plant access. The Tennessee Code Annotated 68-221-401 et. seq. is the legal authority for this matter.

If soil conditions are not acceptable for an onsite wastewater disposal system, the Division will consider an alternative approved system. The Division also investigates complaints and takes appropriate enforcement action to insure corrections are made. If systems fail, the TDEC issues permits and inspects repair construction.

TABLE 15: TOP SEPTIC TANK BEST MANAGEMENT PRACTICES	
Practice (NRCS Code)	**Number of Areas with Practices Installed (from 200-2014)**
Septic Improvements* (006)	223

Note: Septic improvements includes a septic tank pump- out, repair, replacement, or connection to existing sewer lines where available.

Cooperating Partners

Tennessee Department of Environment and Conservation - Division of Water Resources (TDEC-DWR)

TDEC-GWP and seven contracted county health departments review the installation of all septic systems in Tennessee. By assuring that proper porosities exist in local soils through soil percolation tests and through periodic and final inspection of septic tanks and lines, TDEC-GWP prevents pathogens from reaching the ground water.

In many cases, especially in Middle Tennessee, access to ground water is protected by just a thin veneer of soil which restricts the installation of standard septic systems. The presence of shallow hardpans (shallow layers of impervious material) can also cause problems for subsurface drainage. TDEC-GWP has the expertise of dealing with these issues on a daily basis, thereby making them ideal partners to assist the TN-NPS Program in addressing related water quality issues.

U.S. Geological Survey (USGS)

All three offices of the USGS, Knoxville, Nashville, and Memphis, are actively involved in ground water monitoring. The Knoxville and Nashville offices are involved in the National Water Quality Assessment (NAWQA) program in the upper and lower Tennessee River watersheds. The USGS monitors ground water to determine how it interacts with local surface waters.

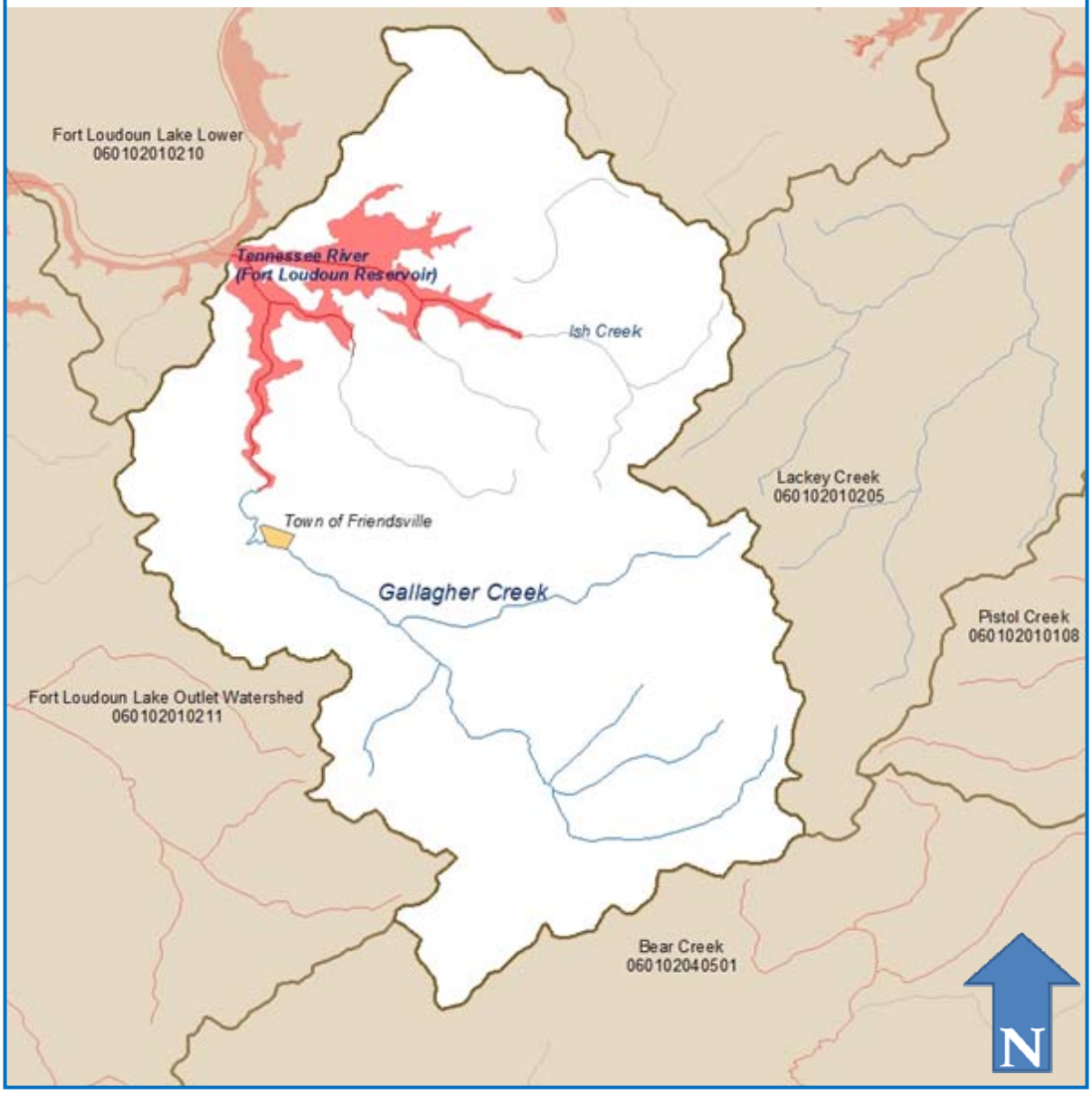
Major Accomplishments

Success Story (in progress of being reviewed by EPA) – Gallagher Creek Restoration Project – septic improvements – 13.2 miles delisted

BMPs implemented in the watershed, including septic renovations, were successful in improving water quality in Gallagher Creek, and allowed for removal of the 13.2 mile stream from the state's 303(d) list of impaired waters in 2010. A map of the Gallagher Creek watershed showing 12 digit Hydrologic Unit Code (HUC) boundaries, with Gallagher Creek located in HUC 060102010209 can be found in Figure 11. Blue lines indicate a fully supporting stream, gray lines are streams that

were not assessed, and red indicates impaired streams. These stream assessments were determined by the Tennessee Department of Environment and Conservation.

FIGURE 11: MAP OF GALLAGHER CREEK RESTORATION PROJECT



Goals for Failing Septic Systems

The TN-NPS Program has identified several Annual Goals and Long Term Goals to mitigate nonpoint source pollution from failing septic systems/sanitary waste handling facilities. Some baseline information regarding previous septic system repairs and replacements was available as of the date of this Plan, and the number of projects was being tracked; however, the tracking system needs refinement in order to provide the exact information needed for evaluating adequate progress and success.

TDEC's rules, Chapter 1200-1-6.14, offer Alternative Methods of Subsurface Sewage Disposal. It is permissible in Tennessee to use alternative or experimental means of sewage disposal for subsurface areas. Many times these nonconventional systems are best suited for the geology and soils of the land in which they are placed. Very site-specific, detailed designs are used. For example, where percolation tests are required, guidelines are given for lot size, test hole reporting, etc. In the rules for such systems, flow rates are given, as well as site and soil requirements. Septic tanks themselves must conform to the rules in terms of design, construction and installation.

Plumbing from residence to new septic tank

TABLE 16: FAILING SEPTIC SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	TN-NPS Partners	• Fund the repair/replacement of no less than 20 failing septic systems each year, depending on the number of active projects that address failing septic systems. • Staff Watershed Coordinators will perform no less than 20 site visits each year to inspect work on repair/replacement of failing septic systems.	• Improve water quality by reducing water quality impacts from failing septic systems.
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	TN-NPS Applicants Stakeholders	• TN-NPS staff will attend/participate in at least 1 educational event each year targeting an audience with failing septic concerns. • Fund at least 1 educational event each year targeting an audience concerned with NPS pollution from failing septic systems. • Document at least 100 citizens presented with messages addressing NPS pollution concerns stemming from failing septic systems.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of septic nonpoint source impacts.

TABLE 16: FAILING SEPTIC SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 3: Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	TN-NPS Stakeholders Partners	• TN-NPS staff will attend at least 1 stakeholder meeting each year to promote the TN-NPS program.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of septic nonpoint source impacts. • Educate citizens regarding management practices to prevent or minimize nonpoint source pollution from failing septic systems.
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	TN-NPS	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	• Increase knowledge of effective and efficient sector-specific BMPs and improve measures of success tracking.

TABLE 16: FAILING SEPTIC SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 5: Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	TN-NPS Partners	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	• Not applicable.
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	TN-NPS	• Not Applicable - grant award obligations are not defined by pollutant sector.	• Not applicable.

Resource Extraction and Legacy Mining

Introduction

Mining has been in Tennessee as early as the 1790s. Important mining products have been iron, bituminous coal, copper lead, zinc and phosphate. Stone and limestone rock are also mined. Oil and gas wells require permitting.

Since 1981, the Tennessee Land Reclamation Section has reclaimed over 4,000 acres of abandoned mine lands in Tennessee. The cost has been $40.5 million dollars.

When mines are not properly constructed, operated, or reclaimed, they cause significant NPS pollution. Sediment is washed into streams when reclamation is inadequate. The impurities in coal create acids when exposed to water and air, and these acids often wash into streams or seep into groundwater.

Description

TDEC – Division of Water Resources is responsible for the non-coal surface mining program and gravel dredging. According to the 2012 305(b) Report, permitted resource extraction accounts for 1% of impacted waters. Currently there are 656 active and inactive mining permits in TDEC's Waterlog System. Legacy or historic mining accounts for 4% of impairments to waterbodies in Tennessee. Mining continues to impair streams in the Cumberland Plateau and Central Appalachian regions of the state. There are three reservoirs in the state that are almost filled in with sediment caused by historic mining. They are Ocoee Reservoir Number 3, Ocoee Reservoir Number 2, and Davy Crockett Reservoir.

Low pH, elevated alkalinity, or a significant change in the pH or acidity of the water over a relatively short period of time, can greatly impact aquatic life. A common reason for a change in pH is acidic runoff from active or abandoned mine sites. Currently, 394 stream miles are listed as impaired by low pH, most in areas with historical mining activities.

Disturbance of certain rock formations during road construction can also release acidity to streams. Excessive amounts of algae can cause streams and rivers to violate standards on the alkaline side, but this phenomenon more commonly occurs in lakes.

The pH level also plays an important role in the toxicity of metals, with pH levels below 5.5 generally increasing toxic effects. On the other hand, ammonia toxicity is increased in the presence of high pH. The statewide fish and aquatic life pH criterion for large rivers, reservoirs, and wetlands is 6.5 to 9.0. The pH criterion for wadeable streams and rivers is 6.0 – 9.0.

A complicating factor is that increased acidity causes some metals to become more toxic. In many waterbodies assessed as impaired by acidity, it is difficult to discern whether the harm was caused by the reduced pH or the resulting metal toxicity, especially in areas with historical or active mining present. Conversely, increased alkalinity makes ammonia more toxic.

As in rivers and streams, metals can pose a serious health threat in reservoirs and lakes. The concerns with metals contamination include the danger it poses to people who eat fish from contaminated reservoirs as well as toxicity to fish and aquatic life.

The reservoirs in Tennessee assessed as impaired by metals have been impacted by legacy activities, atmospheric deposition, or industrial discharges. The copper, iron, and zinc found in three Ocoee River Reservoirs are from historical mining operations. Mercury in the Clinch River section of Watts Bar Reservoir is from legacy activities at the Department of Energy (DOE) Reservation. Additional reservoirs or embayments impacted by mercury include upper Fort Loudoun, upper Cherokee, Beech, Watauga, South Holston, Tellico, Norris, and the Hiwassee embayment of Chickamauga Reservoir.

Extent of the Problem

In the 1970's, coal mining was one of the largest pollution sources in the state. "Wildcat" operators strip-mined land without permits or regard for environmental consequences to provide low-priced coal to the growing electric industry. When the miners had removed all the readily available coal, they would abandon the site. In 1983, the price for coal fell so low it was no longer profitable to run "wildcat" mining operations, so most illegal mining operations stopped.

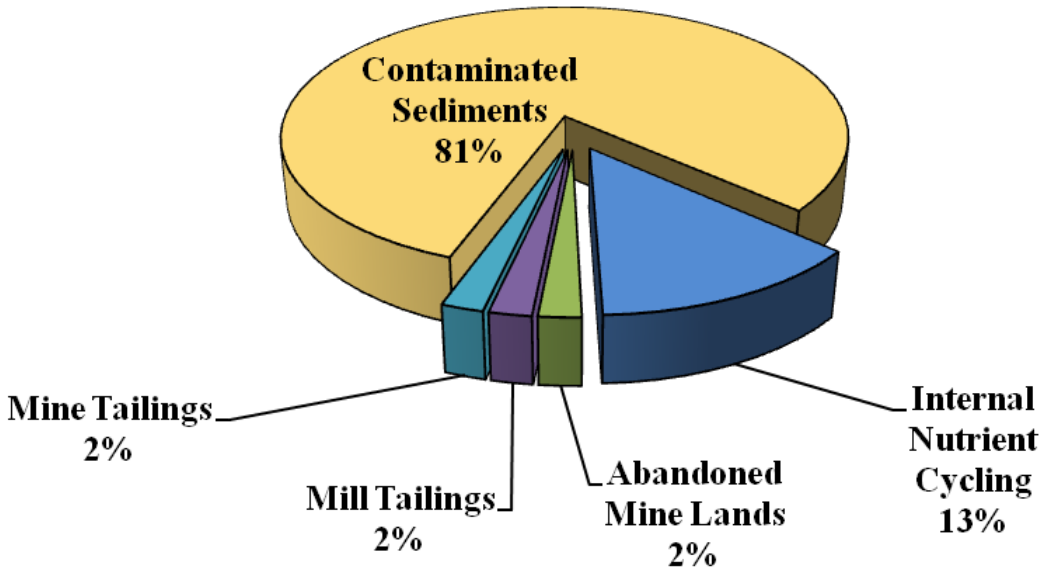
Although many streams and rivers are still impaired by runoff from abandoned mines, which contain pollutants such as silt, pH, manganese, and iron, significant progress has been made in site reclamation. Some abandoned strip mines are being reclaimed under the Abandoned Mine Reclamation program and others are naturally re-vegetating. New mining sites are required to provide treatment for runoff.

Contaminated Sediments

The main problem with toxic contaminants in sediment is they can become concentrated in the food chain. In most places in Tennessee, it is safe to eat the fish. However, in some waterbodies, organic pollutants (primarily PCBs, dioxins, chlordane and other pesticides in the sediment) and mercury are bioconcentrated through the food chain in the fish.

Fish tissue samples are collected and analyzed from waterbodies across the state. Results are compared to criteria developed by the Food and Drug Administration (FDA) and EPA. If fish tissue is contaminated and the public's ability to safely consume fish is impaired, the waterbody is posted with signs and assessed as not supporting recreational uses. The advisories are also listed

FIGURE 12: IMPACTS FROM MINE TAILING

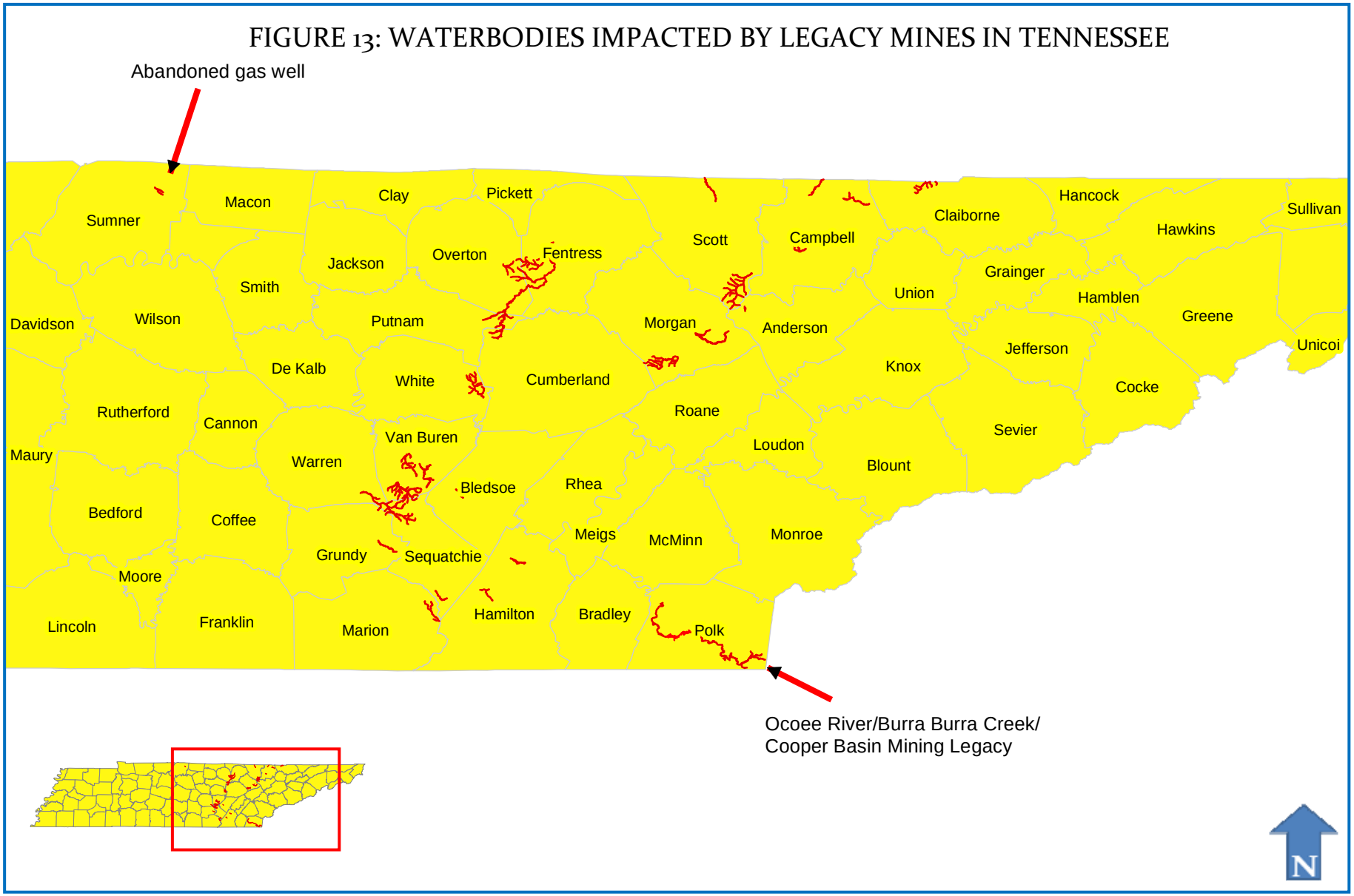


on the TDEC website and included in sport fishing regulations. The Tennessee Valley Authority (TVA) and the Tennessee Wildlife Resources Agency (TWRA) share resources and expertise in this process. Many substances found in fish tissue today, like DDT, PCBs, and chlordane, were widely distributed in the environment before they were banned. The levels of these substances will slowly decrease over time. Currently companies with permits to discharge organic substances have very restrictive limits.

Abandoned Mines/Mine Tailings/Mill Tailings

The Copper Basin in the tri-state area of Tennessee, Georgia, and North Carolina was extensively mined beginning in 1843. Before 1900, this was the largest metal mining area in the southeast. The last mine closed in 1987. Runoff from disturbed areas has contaminated three downstream reservoirs on the Ocoee River. Much of the area has been reforested. Due to CERCLA activities, water quality in the Ocoee River has improved. Although much work remains to be done before water quality goals are met, the transport of pollutants to the Ocoee River appears to have diminished.

FIGURE 13: WATERBODIES IMPACTED BY LEGACY MINES IN TENNESSEE



Solutions

Reclaim mines and have miners use Best Management Practices (BMPs) are several solutions to mining nonpoint source pollution. Identify sites where there are abandoned mines and apply remediation methods that have been successful in previous situations. These include, but are not limited to:

- Regrading of spoil
- Isolation of acid producing material from water contact
- Anoxic limestone drains
- Constructed wetlands

TABLE 17: TOP RESOURCE EXTRACTION BEST MANAGEMENT PRACTICES

Practice (NRCS Code)	Number of Areas with Practices Installed (from 200-2014)
Land Smoothing (466)	1
Land Toxic Discharge Control (455)	2
Land Reconstruction, Abandoned Mine (543)	1

Cooperating Partners

Tennessee Department of Environment and Conservation, Land Reclamation Section http://www.tn.gov/environment/water/mining.shtml

The Land Reclamation Section of the Tennessee Department of Environment and Conservation is located in Knoxville, Tennessee at TDEC's Environmental Field Office. Their main goal are to remove dangerous health and safety hazards from the public, restore the land to its original use after mining, and improve the environment. TDA has had and plans to have project in the future with this organization.

Tennessee Valley Authority http://www.tva.gov/

TVA is involved in land reclamation and helps stabilize shores, protect water, and stop erosion. They are also heavily involved in monitoring, especially fish communities.

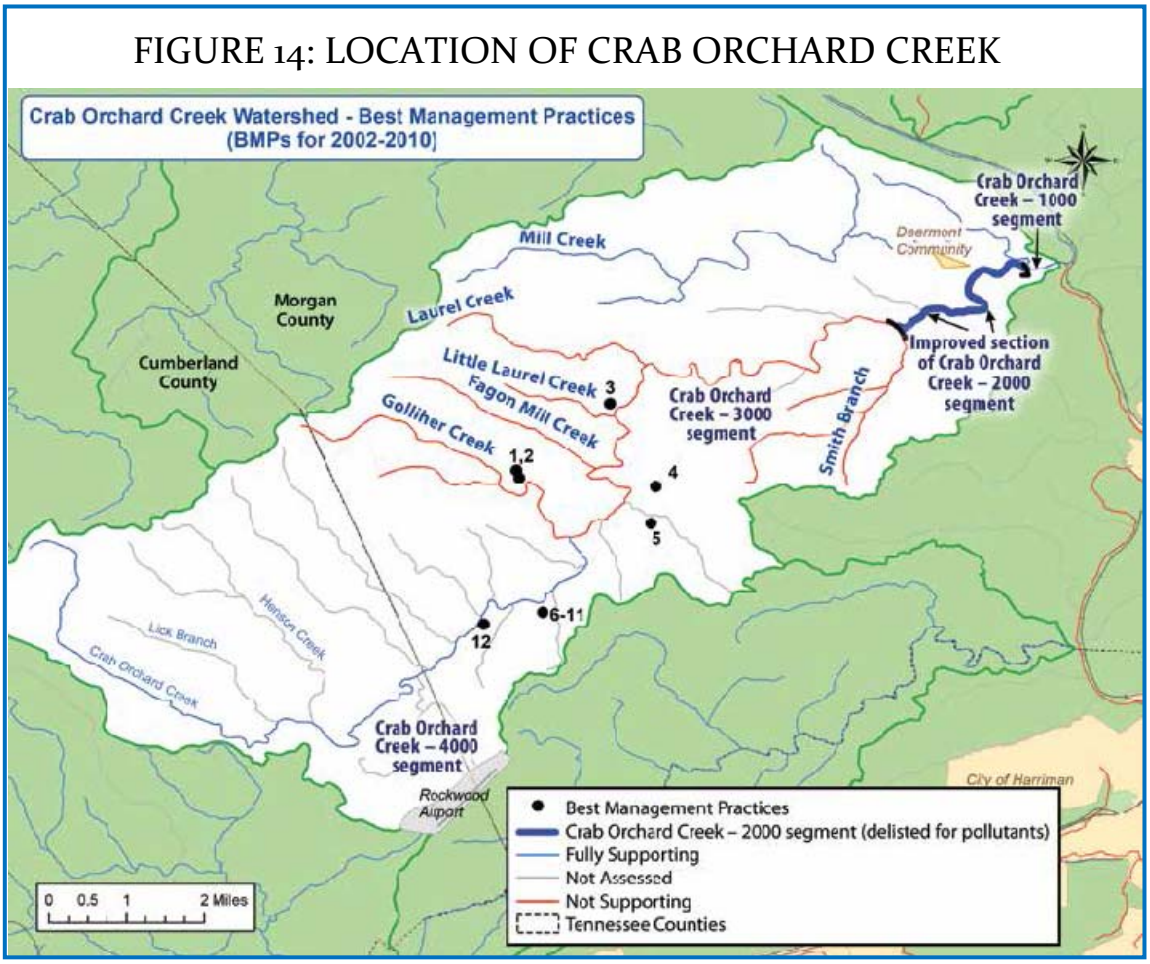
Major Accomplishments

Included within the 2012 303(d) list is Appendix A. Appendix A contains a listing of stream segments that were on the previous 2010 list and have been removed for reasons relating to water quality. Examples of where restoration activities have improved or reversed impacts to streams from abandoned mining sites took place are below. Such findings are evident through stream surveys and biological monitoring studies.

One stream segment that the TN-NPS program will be evaluating as a potential Success Story is Straight Fork. Straight Fork, Scott County, 25.4 miles was impaired due to pH and other anthropogenic substrate alterations from Abandoned Mining and Channelization. This stream was listed due to pollutants from abandoned mining sites in the headwaters. This stream was surveyed in 2004-2005 at mile 1.9 at Norma Road. No pH violations were noted and biology of the stream was very good. It was monitored again in 2009 and 2010. The TDEC survey for stream biology was very healthy with stream habitat scores in the excellent range (161). With biological index score being consistently met, the water quality was deemed fully supporting and the stream has been delisted for abandoned mining and also channelization. The waterbody ID number for Straight Fork is TN05130104044-0500.

Acid mine drainage (AMD) significantly diminished aquatic life in Morgan County, Tennessee's Crab Orchard Creek. As a result, the Tennessee Department of Environment and Conservation (TDEC) added Crab Orchard Creek to the state's Clean Water Act (CWA) section 303(d) list of impaired waters in 1998 for pH and siltation due to pollution from abandoned mines. Best management practices (BMPs) were installed in the watershed, including intensive restoration activities to abandoned mines. These abatement activities led to the attainment of water quality standards in a 2.3-mile segment of Crab Orchard Creek. The segment was removed from the state's CWA section 303(d) list of impaired waters in 2010.

FIGURE 14: LOCATION OF CRAB ORCHARD CREEK



Goals for Resource Extraction and Legacy Mining

The Annual and Long Term Goals established for the Resource Extraction and Legacy Mining Sector can be found on the following page. It should be noted: a majority of projects in this sector will be legacy-based, as most current resource extraction activities are heavily regulated and permitted, thus making them ineligible for 319 funds.

TABLE 18: LEGACY MINING SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	TN-NPS Partners	• Fund no less than 1 project addressing legacy mining concerns each year, depending on the number and quality of proposals received. • Fund no less than 5 BMPs addressing legacy mining concerns each year, depending on the number of active legacy mining projects. • Staff Watershed Coordinators will perform no less than 5 site visits each year to inspect legacy mining BMPs pre-, during-, and post-construction, depending on the number of active legacy mining projects.	• Improve water quality by reducing water quality impacts from legacy mining.
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	TN-NPS Applicants Stakeholders	• TN-NPS staff will attend/participate in at least 1 educational event each year targeting an audience dealing with legacy mining concerns. • Fund at least 1 educational event each year targeting an audience concerned with NPS pollution from legacy mining activities. • Document at least 100 citizens presented with messages addressing NPS pollution concerns stemming from legacy mining activities.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of legacy mining nonpoint source impacts.

TABLE 18: LEGACY MINING SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 3: Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	TN-NPS Stakeholders Partners	• TN-NPS staff will attend at least 1 stakeholder meeting each year to promote the TN-NPS program.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of legacy mining nonpoint source impacts. • Educate citizens regarding management practices to prevent or minimize nonpoint source pollution from failing septic systems.
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	TN-NPS	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	• Increase knowledge of effective and efficient sector-specific BMPs and improve measures of success tracking.
Long Term Goal No. 5: Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	TN-NPS Partners	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	• Not applicable.

TABLE 18: LEGACY MINING SECTOR GOALS			
Goal	**Parties Involved**	**Annual Goals**	**Overall Result**
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	TN-NPS	• Not Applicable - grant award obligations are not defined by pollutant sector.	• Not applicable.

The Division of Water Resources' coal surface mining section does investigations and enforcement of illegal coal mining activities. Those are coal mines that do not hold a permit from the federal office of Surface Mining. The Division also regulates the surface mining of minerals other than coal. WR has enforcement capabilities through the Tennessee Board of Water Quality, Oil and Gas. The Division inspects facilities and samples discharges for compliance.

There are about 850 Aquatic Resource Alteration permits issued annually. These include 125 gravel dredging authorizations per year.

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Chapter 3: Program Goals and Strategy for Addressing Nonpoint Source Pollution

Goals, growth, and measures of success

Goals for Now and Later

The TN-NPS Program's primary goal is to measurably reduce nonpoint source pollution, measurably improve water quality, preserve threatened water resources, continuously strengthen and expand partnerships, and increase the water resources stewardship of Tennessee's citizens. TN-NPS seeks to be the most effective administrator of 319 funding in the nation, as we seek to restore and protect Tennessee's waterways from nonpoint sources of pollution. This chapter will provide an overview of Long Term Goals (for planning period 2014 – 2018) the TN-NPS is working to accomplish through 319 funding. It should be noted that these goals will be constantly changing and adapting as the Tennessee landscape – environmental, social, and economic – continues to evolve.

Annual Goals versus Long Term Goals

The TN-NPS Program's Long Term Goals were established to help guide the Program for the next five years. The interim success of the Long Term Goals will be measured by through various tracking mechanisms described below, including meeting the milestones set forth in the Annual Goals. Both Annual and Long Term Goals are designed to provide objectives that are easy to track, measurable/quantifiable, and supply meaningful information regarding the success of the awarded projects. In addition, the Annual and Long Term Goals are supported by the Sector-specific and Watershed-specific Annual Goals, and meeting the output requirements and outcomes set forth for the Sector-specific and Watershed-specific Goals assists with the desired outcomes for the overall Program Goals. As priorities statewide are subject to change, so too may the Long Term Goals' focus may evolve. The following long term goals were identified for the TN-NPS Program.

The TN-NPS Program Long Term Goals were established to help guide the Program for the next five years.

Long Term Goal No.1:

Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.

Program Goal No. 1 seeks to improve water quality statewide through nonpoint source controls. This goal is shared by the Tennessee Department of Environment and Conservation (TDEC) – Division of Water Resources, who is also tasked with improving water quality through the administration of administration of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101). The primary difference between TDA's and TDEC's approach is that the TN-NPS Program

is voluntary, while many of the programs administered by TDEC – such as the Municipal Separate Storm Sewer System (MS4) program – are regulatory/permitted activities. Also, TDEC focuses on the control of point source pollution, while TDA works with nonpoint source controls.

Long Term Goal No.2:
Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.

Long Term Goal No. 2 deals with actions the TN-NPS Program can take to energize the stakeholder base. Education and outreach is critical across sectors and watersheds. Attending public meetings, public hearings, and workshops can help the TN-NPS Program "get the word out," which in turn leads to more interest, proposals, and eventual projects to combat nonpoint

Long Term Goal No.3:
Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.

Long Term Goal No. 3 attempts to generate more interest by engaging potential applicants, stakeholders, and partners.

Long Term Goal No.4:
Track interim progress towards restoration of impaired water bodies.

Long Term Goal No. 4 involves the implementation of a formal tracking program for measures of success. Measures of success, or milestones, will be tracked by sector and by watershed. In order to meet this Long Term Goal, a set of Measures of Success worksheets will be developed. Each worksheet will provide information about sector or watershed goals, the outputs required to meet and track goal's success, and whether adequate progress has been made towards meeting the goal. The development of a tracking system will make information about the success of the 319 program more readily available and organized.

Long Term Goal No.5:
Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.

Historically, the TN-NPS Program has emphasized and promoted the submission of proposals dealing with 303(d) listed water bodies. Another important aspect of the TN-NPS Program is working with partners to protect non-listed, but critically important water resources. To that end, during the 2014 – 2018 planning period, program staff will strategize to develop/revise an RFP that clarifies the eligibility of protective projects, as well as the traditionally submitted restorative projects.

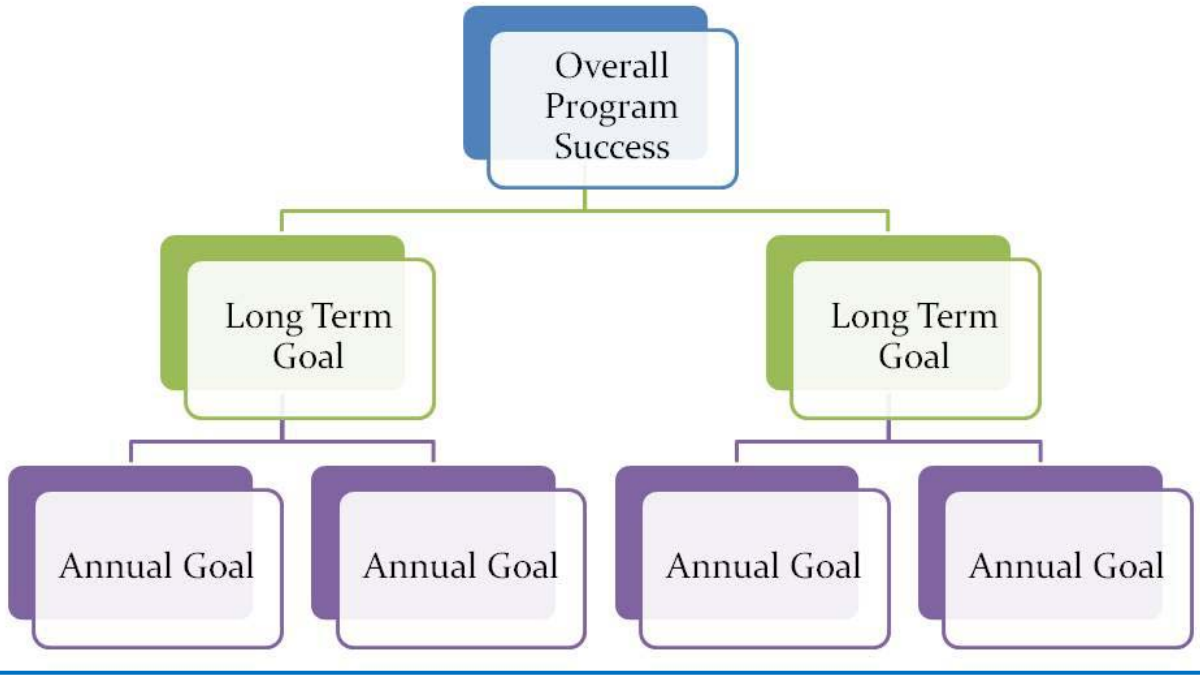
Long Term Goal No.6:
Fulfill all obligations under grant award agreement with USEPA annually.

Long Term Goal No. 6 deals primarily with the required deliverables, standard operating procedures, and program management activities required by the 319 grant funds contract with

USEPA. Many of the measurements of success under Long Term Goal No. 6 are outputs used to satisfy conditions of the 319 grant, including the development of annual report and annual workplan.

Figure 15 illustrates the relationship between Annual Goals (sector-specific), Long Term Goals, and the overall success for the 319 program. Annual Goals support Long Term Goals, which in turn influence the overreaching programmatic aims.

FIGURE 15: GOAL RELATIONSHIPS

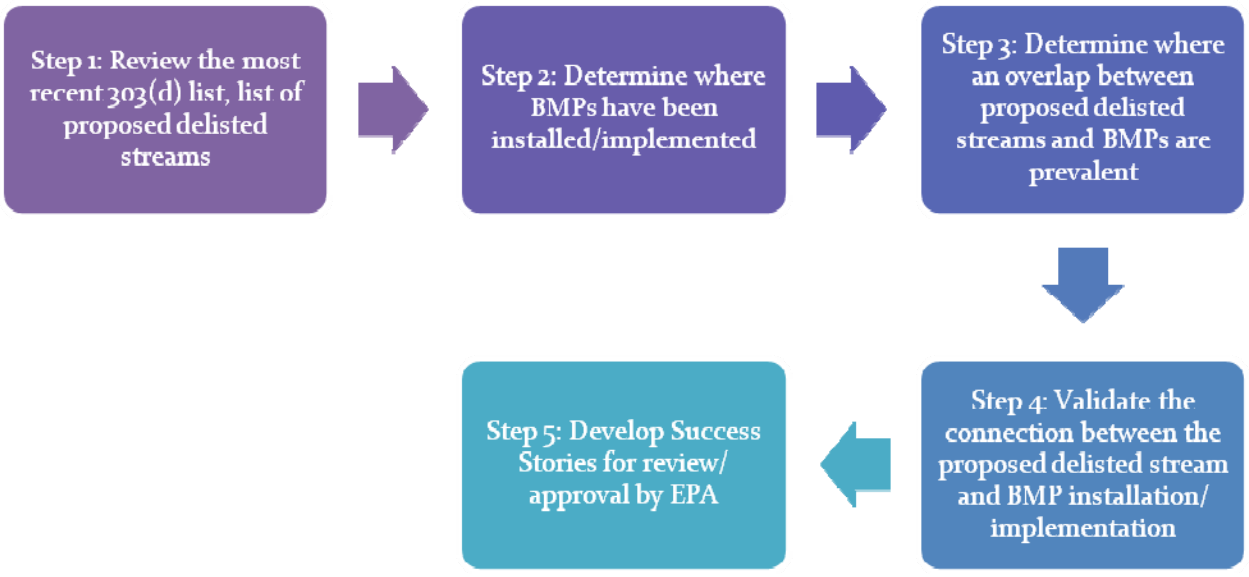


Achieving Success

The TN-NPS Program has traditionally used the formulation of Success Stories as the primary means of determining the overall effectiveness of the 319 funding. Since 2004, the research performed in the development Success Stories have revealed that 377.6 miles of streams and shorelines have been delisted in watersheds with active 319-funded projects. Based on the funding granted to applicants pursuing "on-the-ground" BMP projects in the same timeframe, this translates to approximately $54, 340 per mile restored.

The process by which Success Stories are developed is dependent on the 303(d) list. When a new 303(d) list is published by TDEC, Appendix A: Streams (or pollutants) on the 2010 303 (d) List Proposed For Delisting in 2012 For Reasons Related to Water Quality is reviewed. Using geographic information systems (GIS) software, a map is created illustrating where BMPs have been implemented. The number of BMPs installed is then determined on a subwatershed (HUC12) basis. Any overlap between BMP installation and proposed delisted stream segments is evaluated. Factors taken into account include the number of BMPs installed, the pollutant(s) the BMP is meant to mitigate, the previously identified causes of impairment, and the timeframe for BMP implementation. Data is then compiled to substantiate or invalidate the determination that 319 funding had a significant positive impact on a subwatershed. If significant evidence exists to support the finding that the installed BMPs were instrumental in delisting the stream segment, a Success Story is developed, and submitted to EPA for review and approval. The flow-chart below summaries the process by which Success Stories are identified.

FIGURE 16: SUCCESS STORY DEVELOPMENT PROCESS



The use of Success Stories has proven to be insufficient as a means of evaluating the overall quality of the TN-NPS Program. As the TN-NPS Program has evolved, additional/more specific benchmarks (or Measures of Success) have been developed to assess the efficacy and efficiency of the program. The next section discusses the Measures of Success, how they will be measured, and what outcomes are being sought.

Riparian buffer installation along Goose Creek, which assisted in delisting the creek

Measures of Success

Measures of success, or outputs, have been developed for the TN-NPS Program as a tool to determine whether management decisions, protocols, and project implementation are consistently working towards the overall goals set forth in Section 319. Wherever possible, the milestones are quantitative, easily measurable goals that can be definitively achieved. Due to the nature of the TN-NPS Program, however, some critical program area goals are less tangible. The strategy used for developing measures of success was adapted from *Creating Measures of Success for Your Plan* from the University of Wisconsin - Madison (Paris, 2000). *Creating Measures of Success for Your Plan* stresses the need for outcomes to be quantifiable, while ultimately pursuing the desired qualitative results. The table below summarizes the short term goals (both qualitative and quantitative) identified for the TN-NPS Program. Annual progress will be tracked for both the Annual Goals and the Long Term Goals using Measures of Success Checklists which will be developed for Sector-specific (Agriculture, Forestry, etc).. These checklists will be used to determine if Annual Goals have been met, exceeded, or require attention; and, it will assist in establishing if Long Term Goals are making sufficient progress to be achieved by the end of the planning period, as stated. (Please refer to Appendix C for copies of the checklists.)

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES

Long Term Goal (5 year)	Sector	Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)	Outcomes
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	Aggregate	• Restore 2 water bodies per year, on average. • Reduce N load by 5,000 lbs/year; P_2O_5 load by 5,000 lbs/year; and sediment load by 100 ton/year (minimum reductions)	• Improve water quality by reducing water quality impacts from nonpoint sources.
	Agriculture	• Fund no less than 3 projects each year that address agricultural sources of NPS pollution, depending on the number and quality of proposals received. • Fund the implementation of no less than 65 agricultural BMPs per year. • Staff Watershed Coordinators will perform no less than 200 site visits each year to inspect BMPs pre-, during-, and post-construction.	

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
	Forestry	• Fund no less than 1 forestry-based project each year, depending on the number and quality of proposals received. • Fund the implementation of no less than 5 forestry BMPs each year, depending on the number of active forestry restoration projects.	
	Urban	• Fund no less than 2 projects focused on stormwater issues in developed areas each year, depending on the number and quality proposals received. • Fund no less than 12 stormwater BMPs each year, depending on the number of active urban/suburban restoration projects. • Staff Watershed Coordinators will perform no less than 15 site visits each year to inspect various stormwater BMPs pre-, during-, and post-construction.	
	Failing Septic	• Fund the repair/replacement of no less than 20 failing septic systems each year, depending on the number of active projects that address failing septic systems. • Staff Watershed Coordinators will perform no less than 20 site visits each year to inspect work on repair/replacement of failing septic systems.	
	Legacy Mining	• Fund no less than 1 project addressing legacy mining concerns each year, depending on the number and quality of proposals received. • Fund no less than 5 BMPs addressing legacy mining concerns each year, depending on the number of active legacy mining projects.	

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
		• Staff Watershed Coordinators will perform no less than 5 site visits each year to inspect legacy mining BMPs pre-, during-, and post-construction, depending on the number of active legacy mining projects.	
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	Aggregate	• TN-NPS staff will attend/participate in at least 10 educational events each year. • Fund at least 20 educational events each year, depending on the number of active NPS pollution educational projects funded. • Document at least 2,000 citizens presented with messages addressing NPS pollution sources, problems, and solutions each year. • Develop a general evaluation form to be completed by all participants and the conclusion of each educational event.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of nonpoint source impacts.
	Agriculture	• TN-NPS staff will attend/participate in at least 4 educational events each year targeting an agricultural audience. • Fund at least 5 educational events targeting an agricultural audience. • Document at least 600 citizens presented with messages addressing NPS pollution sources, problems, and solutions. • Respond to 100% of Animal Feeding Operations complaints . • Direct AFO owner/operators to NRCS for mitigation, as necessary.	
	Forestry	• TN-NPS staff will attend/participate in at least 1 educational event each year targeting a forestry audience.	

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
		• Fund at least 3 educational events each year targeting a forestry audience, depending on the number of active projects aimed at forestry issues. • Document at least 200 citizens presented with messages addressing NPS pollution concerns stemming from forestry-related activities.	
	Urban	• TN-NPS staff will attend/participate in at least 3 educational events each year targeting an urban/suburban audience. • Fund at least 10 educational events each year targeting an urban/suburban audience, depending on the number of active projects aimed at urban/suburban issues. • Document at least 1,000 citizens presented with messages addressing NPS pollution concerns stemming from stormwater in urban/suburban areas.	
	Failing Septic	• TN-NPS staff will attend/participate in at least 1 educational event each year targeting an audience with failing septic concerns. • Fund at least 1 educational event each year targeting an audience concerned with NPS pollution from failing septic systems. • Document at least 100 citizens presented with messages addressing NPS pollution concerns stemming from failing septic systems.	
	Legacy Mining	• TN-NPS staff will attend/participate in at least 1 educational event each year targeting an audience dealing with legacy mining	

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
		concerns. • Fund at least 1 educational event each year targeting an audience concerned with NPS pollution from legacy mining activities. • Document at least 100 citizens presented with messages addressing NPS pollution concerns stemming from legacy mining activities.	
Long Term Goal No. 3: Build capacity for future TN-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	Aggregate	• TN-NPS staff will attend at least 8 stakeholder meetings each year to promote the TN-NPS program and recruit and cultivate new partners for future projects. • TN-NPS program will conduct an annual survey of partners, seeking their input for ways our program can improve and better meet existing needs. • TN-NPS staff will provide assistance (as requested) in writing Watershed Based Plans; particularly map-making and load reduction estimates. • TN-NPS program will improve information and tools available on our website to aid in the writing of Watershed Based Plans. • TN-NPS staff will attend at least 3 stakeholder meetings or workshops to promote the 319 program each year.	• Improve relations with stakeholders, potential applicants, and partners. • Increase awareness of nonpoint source impacts. • Educate citizens regarding management practices to prevent or minimize nonpoint source pollution.
	Agriculture	• TN-NPS staff will attend at least 3 stakeholder meetings or workshops to promote the 319 program each year.	
	Forestry	• TN-NPS staff will attend at least 1 stakeholder meeting (e.g., TN Forestry Association or the TN Urban Forestry Council) each year to	

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
		promote the TN-NPS program.	
	Urban	• TN-NPS staff will attend the annual meeting of the Tennessee Stormwater Association (TNSA) each year.	
	Failing Septic	• TN-NPS staff will attend at least 1 stakeholder meeting each year to promote the TN-NPS program.	
	Legacy Mining	• TN-NPS staff will attend at least 1 stakeholder meeting each year to promote the TN-NPS program.	
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	Aggregate	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	• Increase knowledge of effective and efficient sector-specific BMPs and improve measures of success tracking.
	Agriculture	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	
	Forestry	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking	

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
		mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	
	Urban	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	
	Failing Septic	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	
	Legacy Mining	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	
Long Term Goal No. 5: Protect unimpaired/high quality waters (i.e., those not on the 303(d) list) by implementing appropriate	Aggregate	• Consider funding at least 1 project proposal aimed at protection of unimpaired water body each year, dependent upon nature of proposals received.	• Research possible avenues to increase the funding of protective projects.

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
BMPs where warranted.		• Consider changes to TN-NPS proposal evaluation scoresheet to impact the likelihood of water body protection projects receiving funding.	
	Agriculture	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	
	Forestry	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	
	Urban	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	
	Failing Septic	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	
	Legacy Mining	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	Aggregate	• TN-NPS program will do everything necessary to achieve "Satisfactory Progress" determination by USEPA each year. • TN-NPS program will submit an Annual Report by December 31 each year. • TN-NPS program will submit a Grant Application by September 30 each year. • TN-NPS program will submit an Annual Workplan by May 31 each year. • All grant data will be entered in the Grants Reporting and Tracking System (GRTS) by the various deadlines given each year.	• Continue to receive 319 grant funds for statewide disbursement.

TABLE 19: LONG TERM GOALS, ANNUAL GOALS, and OUTCOMES			
Long Term Goal (5 year)	**Sector**	**Annual Goals (outputs; *Aggregate* x 5 = Long Term Goal measure)**	**Outcomes**
		• All grant funds received will be obligated within one year of the date the grant is received. • Each grant received from USEPA will be matched my no less than 40% by a combination of state and local funds. • TN-NPS staff will attend the annual GRTS users meeting each year. • TN-NPS staff will attend the National Nonpoint Source Managers meeting as often as it is held. • TN-NPS staff will attend the Regional Nonoint Source Managers meeting as often as it is held. • TN-NPS program will revise the Management Program Document every 5 years, or as required by USEPA.	
	Agriculture	• Not Applicable - grant award obligations are not defined by pollutant sector.	
	Forestry	• Not Applicable - grant award obligations are not defined by pollutant sector.	
	Urban	• Not Applicable - grant award obligations are not defined by pollutant sector.	
	Failing Septic	• Not Applicable - grant award obligations are not defined by pollutant sector.	
	Legacy Mining	• Not Applicable - grant award obligations are not defined by pollutant sector.	

Areas for Program Growth

The TN-NPS Program is constantly examining new ways to make limited funds achieve better results. Using adaptive management strategies will assist with implementing an efficient use of the available grant awards. This, in turn, will lead to more tangible improvements in water quality statewide. To this end, the TN-NPS Program has identified several areas in which to focus future growth and expansion. It should be noted that as new nonpoint source pollution issues arise, the focus of growth may change.

The TN-NPS Program is constantly examining new ways to make limited funds achieve better results.

Protection and Restoration

As previously discussed, the TN-NPS Program has devoted a majority of time, funds, and effort to restoring impaired waterways. This has been due to several reasons. First, it is a fairly straightforward process to identify an impaired waterway; impaired waters are listed in the 303(d) list developed by TDEC. How do you identify a threatened waterway? Identifying a river or stream that may become degraded is far less clear-cut. The development of a single subdivision upstream of a sensitive portion of a river may lead to decreased water quality/quality of habitat in a relatively short period of time. Also, what is the threshold at which a waterway becomes "threatened." A small increase in pollutant load over a short period of time may not be cause for concern for one watershed, while it may lead to irrepairable harm at another watershed. Finally, how can the success of "protection" be measured? It is incorrect to think that you can declare success if no segments withint the watershed become 303(d) listed. A myriad of factors are at play, and it becomes difficult to state with any degree of certainty that the actions of the 319 partners had any impact on preventing water quality decline.

Assessing cleanup efforts on Whites Creek.

One of the primary areas identified for expanding the TN-NPS Program is with regards to funding projects that are protective of water quality. Additional research and development will need to be completed in order to best implement expansion. First and foremost, an effective and consistent methodology for determining which waters are threatened with

degradation/impairment. The TN-NPS Program intends to make initial selection using *The Known Exceptional Tennessee Waters and Outstanding National Resource Waters* database, as administered by TDEC. Proposals submitted by applicants in these watersheds will be considered eligible for protective project funds. Additional factors, such as efficacy of the BMPs proposed, historic successes with similar projects, etc. will also be used to evaluate potential protective measures.

Nitrogen Reduction Strategy

Increased focus on projects promoting nitrogen load reduction has been identified as a critical area of project growth. This area of growth dovetails with national intiatives meant to reduce the hypoxic zone in the Gulf of Mexico and inhibit eutrophication. As Tennessee borders the Mississippi, the State is a member of the Mississippi River/Gulf of Mexico Watershed (Hypoxia) Task Force. Up to the present, relatively few of the proposals received from West Tennessee have focused on the reduction of nitrogen. Going forward, the TN-NPS Program is planning on conducting additional outreach to solicit proposals with a specific focus on decreasing the nitrogen inputs from nonpoint sources in locations adjacent to the Mississippi River and its tributaries.

Farm Bill Initiatives

With the passage of the 2014 Farm Bill, a new partnership program, known as the Regional Coservation Partnership Program (RCPP) was implemented. The RCPP consolidates multiple authorities (such as the Agricultural Water Enhancement Program, the Cooperative Conservation Partnership Initiative, etc.) and provides assistance through exisiting covered programs such as the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP). Given the newness of the program, additional research will be required to determine the most effective way to leverage partnerships and create synergistic relationships that will combine resources and maximize results.

Land Trust for Tennessee

The Land Trust for Tennessee seeks to “preserve the unique character of Tennessee's natural and historic landscapes and sites for future generations.” (Land Trust for Tennessee. 2014.) To accomplish their goal, the Land Trust for Tennessee works with governmental partners to assist landowners and other interested parties with conservation easements. An area for growth in the TN-NPS Program that is currently under review, is the potential for 319 funds to be utilized to share the cost of legal fees, title searches, and other necessary administrative procedures.

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Chapter 4: Proposal Review and Prioritization

Targeting NPS Grant Money to Achieve the Most Success

Striving for Success

For many years now, the USEPA has had a singular measure of success for state's NPS programs: to improve water quality parameters in individual impaired water bodies to the point where they meet their designated uses and can be removed from the 303(d) list of impaired waters. When that happens, USEPA counts that as a WQ-10 measure – i.e., a "Success Story". With that in mind, the TN-NPS program has put policies and procedures in place to maximize the potential for meeting that level of success as often as possible.

FIGURE 17: SUCCESS STORY DEVELOPMENT PROCESS

Request for Proposals Process

The TN-NPS program takes a bottom-up rather than a top-down approach to our strategy for success. Each year the TN-NPS program chooses projects to fund by evaluating a pool of proposals submitted by groups all across the state of Tennessee. All of those proposals are received in response to a *Request for Proposals* (RFP) that is widely distributed each year around the first week of September. The 2014 RFP can be found in Appendix D. The RFP is e-mailed to a large set of past grant recipients and many other groups and people who have asked to be on our e-mailing list (several hundred addresses). Also, the Tennessee Department of Agriculture sends out a statewide

press release announcing the RFP. Complete proposals must be submitted to the TN-NPS program by December 1 each year.

The RFP outlines the priorities of the TN-NPS program as well as the evaluation criteria that will be used to score and rank each proposal. Other items that are explained include the requirement for matching funds, the reimbursement process, the length of projects (3-year maximum), the submittal process, the limit on indirect costs, and the structure of 9-element watershed based plans. Also provided are a watershed based plan template, guidance on watershed based plans, a template our proposal format, and a procurement policy.

Review of Proposals

Once all of the proposals are received, they are briefly evaluated to the point they can be divided into two groups: educational projects and restoration projects. This division is done by TN-NPS program staff.

Educational projects are wholly devoted to implementing a program to reach an audience with a message about NPS pollution concerns and solution. Sometimes the audience is very specific, such as teachers or elected officials. Other times the intended audience is very broad, such as farmers or homeowners or every citizen of Tennessee. Sometimes these projects are mostly about developing and distributing some type of education materials such as brochures, dvds, classroom materials, maps, etc. Other times these projects are about conducting workshops or meetings regarding NPS pollution. Also considered along with the purely educational proposals are those that intend to demonstrate a BMP or suite of BMPs in a particular site or a few, limited sites.

Restoration projects all contain an educational element, but they are clearly aimed at implementing the most appropriate BMPs in a particular local watershed with the goal of restoring that body of water to a fully supporting status; their ultimate target is to remove that stream reach from the 303(d) list (see Appendix E). All of the proposals in this group must be accompanied by a 9-element watershed based plan or refer to a watershed based plan that has previously been approved for that watershed.

Once the two groups are decided on and separated, the formal evaluation process begins. The educational and restoration groups are each reviewed independently from the other. All projects within each group are thoroughly read, scored and ranked using the appropriate score sheet of the two found in Appendix F. All proposals in the educational group are read by only TN-NPS program administrative staff. Restoration projects are also read by TN-NPS program administrative staff, but they are also sent to the appropriate TN-NPS program watershed coordinator and the appropriate TDEC field office for review from a local perspective.

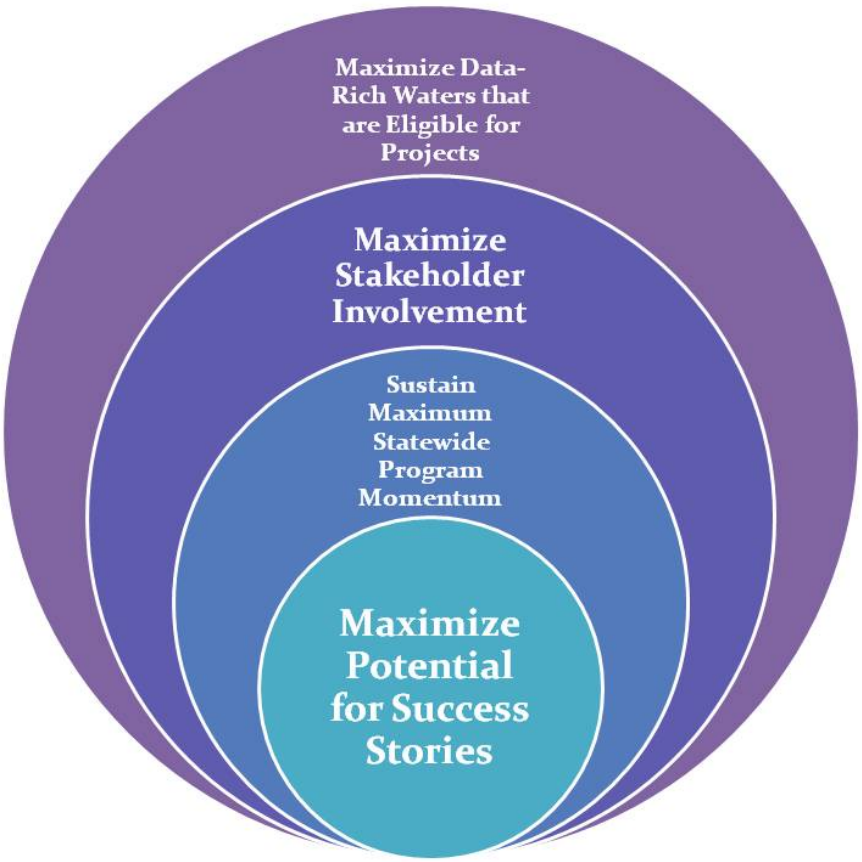
As mentioned above, use of the score sheets is intended to make this mostly an objective exercise. However some room for subjectivity was purposefully built- in where you see a range of points can be awarded, largely dependent on the reviewer's feelings/instincts/prior experiences related to the applicant or a particular factor in the evaluation process. Once the scores are determined and projects are ranked, there is a final discussion among the staff regarding whether or not to go with

the rankings as they fell out, or if there are any reasons to override the ranking and move up a project that otherwise would likely not have ranked high enough to receive funding.

Strategy and Process for Prioritization

The 2014 Nonpoint Source Guidance increases the emphasis on watershed project implementation in watersheds with impaired waters, (pg.1 NPS Guidance). As detailed in the 2014 319 Program Guidance Document, each state is directed to develop a process to prioritize waters and to progressively address these waters by conducting more detailed assessments and plans and, most important, by implementing these plans. The core purpose of the 319 Program is to measurably reduce nonpoint source pollution through funding targeted grant projects. This implies that the location of 319 projects must be where water quality assessment data is present, in order for the subsequent watershed-based planning to have a fact-based foundation and restoration efforts be focused and targeted to the correct sources. In Tennessee, this targeted set of waters are those waters assessed as impaired by nonpoint sources that are contained in the 303(d) List. The most recent, approved version of the 303(d), which serves as Tennessee's "priority watersheds," can be found in Appendix E. This subset of impaired waters comprises 17% of all Tennessee streams. It is vital to note that this is only the starting point for the selection of priority waters. It is our aim through the process outlined below to maximize the potential for documented success stories, which should be the goal of all state 319 programs. In order to achieve this, our program must maximize the number of waters that are eligible candidates for restoration projects while

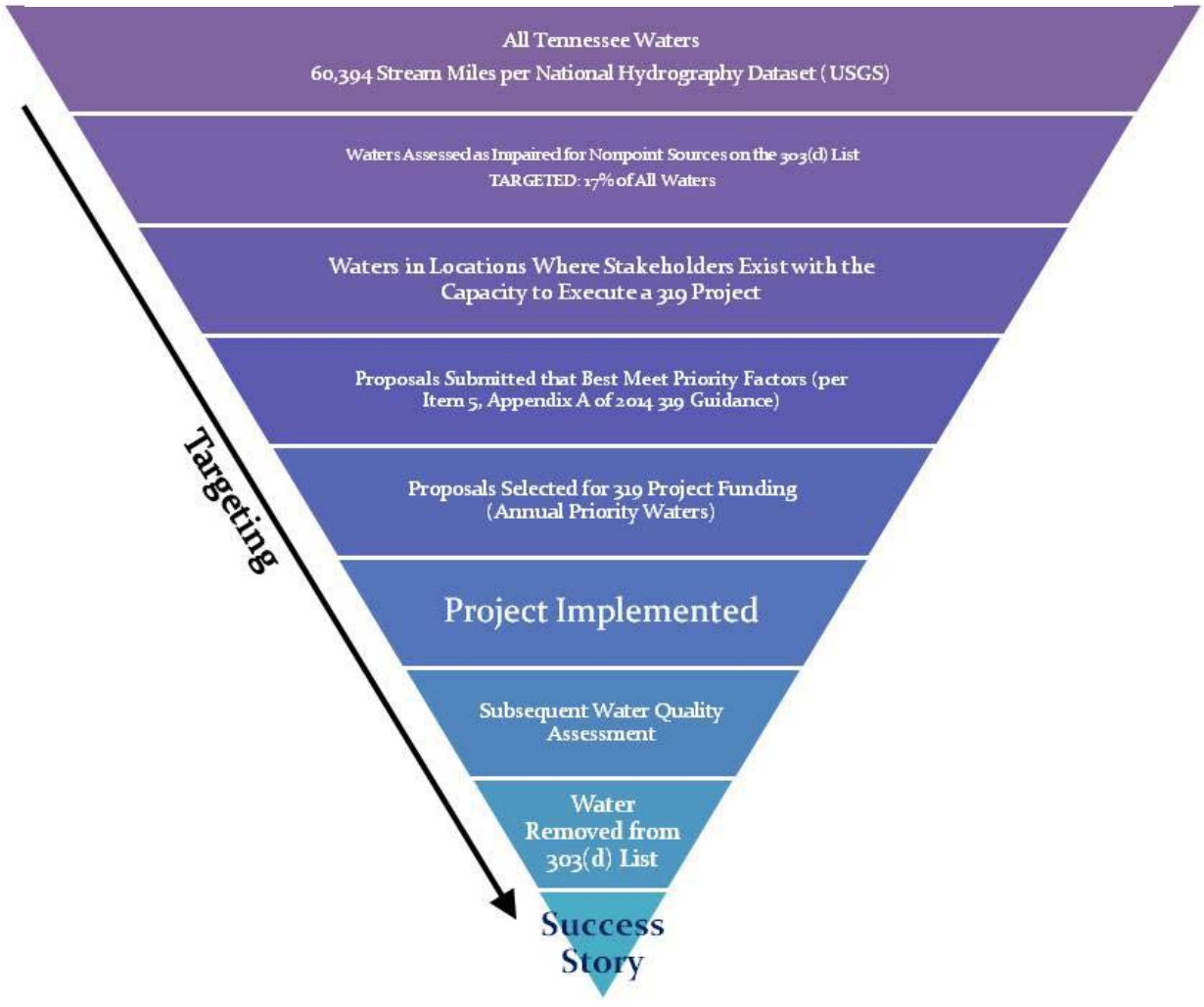
FIGURE 18: MAXIMIZING SUCCESS STORY POTENTIAL



maintaining the maximum level of statewide stakeholder involvement, and statewide voluntary program momentum.

Our procedure for identifying priority waters involves not only the 303(d) listing process, but also the program's Request for Proposals and proposal evaluation procedures. Through the RFP, proposals from all Tennessee waters may be submitted, but proposals seeking to restore a water listed on the 303(d) List as impaired by nonpoint source pollution receive a higher ranking. Other factors, such as many of those listed in Item 5, Appendix A of the 2014 Nonpoint Source Grant Program Guidance are considered and are currently included on proposal evaluation score sheets (see Appendix F); specifically, the likelihood of achieving demonstrable environmental results, the degree of understanding of the causes of impairment and solutions capable of restoring the water, the existence of an approvable watershed-based plan, project implementability, extent of partnerships to support the project, availability of additional financial resources other than 319 funds, readiness to proceed by the project partner. Through this evaluation, a very small number of projects are selected that become the Tennessee 319 Program's annual priority waters.

FIGURE 19: SUCCESS STORY TARGETING



This priority water selection process gives the Tennessee 319 program the best opportunity for meeting the core purpose as stated above, given the many tangible and intangible variables that factor into a voluntary, incentive-based program such as 319. Using the 303(d) List as the subset of waters that will rank the highest in proposal review gives all stakeholders across the state the firmest "starting point" for restoration work and a level, scientifically-based, and data rich playing field for proposals. Once a stakeholder group takes the assessment information available and develops from it a watershed-based restoration plan, momentum at the local level begins to build for implementing the plan to restore the water. The momentum toward project success cannot be overlooked or marginalized. All these projects are voluntary, and rely on committed stakeholders to convince landowners on the benefits of making changes to the landscape to improve the condition of the water. Stakeholders must feel they have a reasonable chance to apply for and be awarded a grant to make improvements to waters that are impaired in their particular area of interest. The most important factor in watershed/project selection in this non-regulatory or voluntary work is where are there willing and able partners who are ready and enthusiastic to implement a restoration project? This type of partner identifies themselves by responding to the RFP. This is the key reason behind all the success the Tennessee program has experienced; chiefly the 34 documented success stories Tennessee has been able to develop and post on the EPA website to date, and the submittal of many strong proposals by eligible stakeholders each grant cycle.

Summary of Tennessee's Prioritization Process (Bottom-Up Approach):

- Eligible Priority Waters are the waters listed on the 303(d) List as impaired for nonpoint sources (17% of all Tennessee waters). Please refer to Appendix E.
- Distribute the annual RFP, with all TN waters eligible, but higher ranking to 303(d) waters
- Receive proposals from eligible stakeholders, and score and rank using Evaluation Factors from Appendix A of the 319 Guidance
- Waters where restoration projects are awarded are deemed the annual priority waters

TABLE 20: LIST OF CURRENT PRIORITY WATERS

Water Name	Grant Year	County	HUC	Watershed	TMDL
Bull Run Creek	2013	Knox, Union, Anderson, Grainger	06010207	Lower Clinch	Yes
Roan Creek	2008	Johnson	06010103	Watauga	Yes
Baker Creek and Centenary Creek	2009	Blount, Loudon	06010204	Lower Little Tennessee	Yes
Beaver Creek	2012	Sullivan	06010102	South Fork Holston	Yes
North Mouse	2009	McMinn	06020002	Hiwassee	Yes

Creek					
Davis Creek	2011	Campbell, Claiborne, Union	06010206	Powell	Yes
Mulberry and Little Mulberry Creeks	2012	Hancock, Claiborne	06010206	Powell	Yes
Middle Clinch River	2011	Hancock	06010205	Upper Clinch	Yes
Cathy Jo Branch	2010	Davidson	05130202	Lower Cumberland - Sycamore	No
Cash Hollow Creek	2012	Washington	06010103	Watauga	Yes
Robertson Fork Creek	2009	Giles	06030004	Elk	Yes
College Creek	2009	Greene	06010108	Nolichucky	Yes
Harpeth River Headwaters	2011	Rutherford	05130204	Harpeth	Yes
Caney Creek	2008	Hawkins	06010104	Holston	Yes
Lost Creek	2011	Jefferson	06010104	Holston	Yes
Stock Creek	2012	Knox, Blount	06010201	Ft. Loudoun Lake	Yes
Cold Creek	2010	Lauderdale	08010100, 08010208	Lower Mississippi - Memphis, Lower Hatchie	No
Tripp Town Watershed	2012	Lawrence	06030005	Pickwick Lake	No
Spring Creek	2012	Marshall	06040002	Upper Duck	Yes
Crooked Fork Creek	2013	Morgan	06010108	Emory	Yes

Headwaters of Obed River	2010	Cumberland	06010208	Emory	Yes
Valley Branch	2013	Robertson	05130206	Red	Yes
Sequatchie River Tributaries	2011	Bledsoe, Marion, Sequatchie	06020004	Sequatchie	Yes
Fork Creek	2012	Monroe, Loudon	06010204	Lower Little Tennessee	Yes
Conasauga River	2009	Bradley, Polk	03150101	Conasauga	Yes
Guntersville Lake Tributaries	2010	Grundy	06030001	Guntersville Lake	Yes
Rutherford Creek	2013	Williamson, Maury	06040003	Lower Duck	Yes
Furnace Creek	2010	Johnson	06010103	Watauga	Yes
Hinds Creek	2008	Anderson, Union	06010207	Lower Clinch	Yes
Oostanaula Creek	2011	McMinn, Monroe	06020002	Hiwassee	Yes
Forked Deer River	2013	Madison	08010205	South Fork Forked Deer	Yes

Seeking to improve the Prioritization Process

Future refinements to this process may result in even more documented success. The TN-NPS program will carefully evaluate two new tools; the Recovery Potential Screening Tool and the Nitrogen and Phosphorus Pollution Data Access Tool to determine their respective utility in assisting the program with meeting or exceeding our goals. Also, our project evaluation score sheets are continually subject to revision if we see an opportunity to improve our prioritization process. In the next five years, TN-NPS staff will consider revising how the protection of non-impaired waters factors into our score sheets. Currently, restoration vs. protection is a factor on our score sheet, but exactly how that works could be changed. Similarly, we will consider if the score sheets should also be modified to give proposals additional points if they are from a watershed for which a TMDL has been written.

Chapter 5: Partnerships

Working Together to Achieve More Blue for Less Green

Overview of Partnerships

As pressures on natural resources and environmental agencies increase and the issues we face become more complex, the idea of partnerships can hold much promise. Through partnerships we can contribute our small part and reap the benefits of everyone's effort; we can accelerate learning and distribute skills and knowledge; we leverage more funding; and we can add depth and breadth to our community impact. To make real the promise of partnerships, however, we must be prepared to build, sustain, and evaluate them in a thoughtful way.

Why Form Partnerships?

While there are many recognized benefits and advantages to partnership development, the answer to why one seeks to establish partnerships is relatively simple. There is added value in working with other organizations.

The benefits of effective partnerships do not appear overnight. Establishing effective and inclusive partnerships takes time, and it is important for you to create the right framework from the start and review the structure and process of the partnership on an ongoing basis to measure its success or failure.

What is a "Partnership?"

A partnership in this context is a collaborative relationship between entities to work toward shared objectives through a mutually agreed division of responsibilities and tasks. The divisions many times are fairly obvious because of the way each group brings differing abilities, expertise, interests, and financial commitments to the table.

While this working definition is not very precise, it does help distinguish partnerships from other cross-agency relationships. Partnerships are inherently complex vehicles for the delivery of practical solutions on the ground and at the strategic level. Several studies of how partnerships operate indicate that practitioners manage the complexity by adopting a long-term, flexible, and organic approach. Why organic? During the course of these partnerships, organizations often evolve as they learn more about effective management, build capacity, and gain valuable experiences. In that sense, partnerships act as learning mechanisms that teach you to be better at what you do and enable you to achieve your goals.

There are several key components of the most common approaches to partnerships:

Leadership

Partnerships imply a shared leadership among respected individuals who are recognized and empowered by their own organizations and trusted by partners to build consensus and resolve conflicts.

Common Understanding

A common understanding of the framework, culture, values, and approach of partner organizations needs to exist. Also important is a clear understanding of individual members' roles and responsibilities regarding the division of labor.

Purpose

A shared common vision and purpose that builds trust and openness and recognizes the value and contribution of all members also needs to exist. Additionally, shared and transparent decision-making processes—extending the scope of influence over and involvement with other services and activities—will prove essential to your partnership. Shared goals and aims, understood and accepted as being important by each partner, lead to improved coordination of policies, programs, and service delivery, and, ultimately, better outcomes.

BASICS OF PARTNERSHIP DEVELOPMENT

- ☑ Need for Partnership
- ☑ Clarity of Leadership
- ☑ Clarity of Understanding
- ☑ Different cultures/practices
- ☑ Clear Purpose
- ☑ High Commitment Levels
- ☑ Trust
- ☑ Clear Working Arrangements
- ☑ Performance Management Systems
- ☑ Learning/Exchanges of Good Practices

Culture and Values

Shared can-do values, understanding, and an acceptance of differences (e.g., values, ways of working) are all key components of a successful partnership. Having respect for the contributions of all partners, combined with an absence of status barriers, will lead to the active involvement of members who are identified as being effective, representative, and capable of playing a valued role in the partnership.

Learning and Development

A healthy partnership promotes an atmosphere of learning. This may involve monitoring and evaluation aimed at improving members' performance. Investing in partner skills, knowledge, and competence needs to be highly valued within the partnership. This open mindset and spirit of facilitation creates opportunities to shape each other's work and learn together. In this environment, members can more effectively reflect on both developmental successes and failures.

Communication

If a partnership is going to succeed in the area of communication, strong feedback loops are required. Effective communication at all levels within the partnership and within partner organizations, sharing and accessing all knowledge and information, needs to exist.

Performance Management

Management practices and resources are required to achieve the partnership goals and complement the intended purpose of the partnership. Specifically, members must demonstrate accountability for the actions they take and ownership of delivery of the objectives and targets for which they are responsible.

BARRIERS TO SUCCESSFUL PARTNERSHIPS

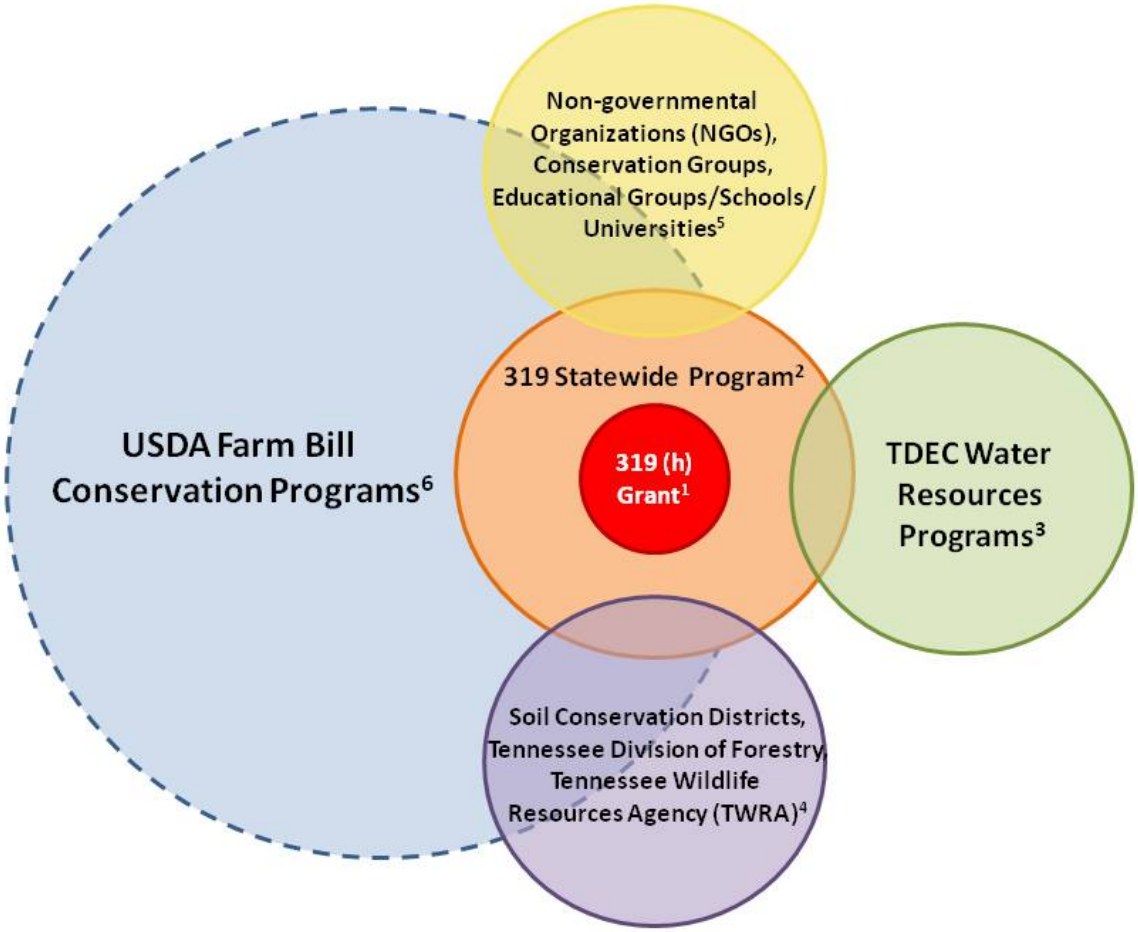
- Limited vision/failure to inspire
- One partner manipulates or dominates, or partners compete for the lead
- Lack of clear purpose and inconsistent level of understanding purpose
- Lack of understanding roles/responsibilities
- Lack of support from partner organizations with ultimate decision-making power
- Differences of philosophies and manners of working
- Lack of commitment; unwilling participants
- Unequal and/or unacceptable balance of power and control
- Key interests and/or people missing from the partnership
- Hidden agendas
- Failure to communicate
- Lack of evaluation or monitoring systems
- Failure to learn
- Financial and time commitments outweigh potential benefits
- Too little time for effective consultation

You must remain equally aware of key barriers to a working relationship with a potential partner. Furthermore, as relationships evolve, partners must work to resolve any barriers. At left is a list of potential barriers to successful partnerships that should be considered.

319(h) versus 319

There should be a distinction made between the work of the 319(h) program and the 319 program at-large, within each state. They are closely aligned by objectives and partnerships, but many times the lines are blurred as to exactly what work is being done by what program. The 319(h) program is the work authorized and funded specifically by section 319(h) of the federal CWA; it is the true, federal portion of each state's NPS program. It includes all program work (e.g., staff salaries, supplies, travel, etc.) as well as project work (e.g., education and/or restoration projects) funded directly by the state's NPS grant from USEPA. The broader 319 program incorporates the 319(h) program as well as work done by other groups and paid for by other funds. It is NPS work done on parallel tracks that occasionally intersect the 319(h) track, but aren't entirely or necessarily driven by 319(h) funds. See Figure 20 below for a graphical representation of these relationships.

FIGURE 20: 319(h) VERSUS 319



Notes:

[1] The 1987 amendments to the Clean Water Act (CWA) established the Section 319 Nonpoint Source Management Program to address the need for greater federal leadership in order to focus state and local nonpoint source efforts. Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects. These monies form the foundation of the 319 Grant program in the State of Tennessee.

[2] Established in 1987, the Tennessee Department of Agriculture (TDA) administers the Nonpoint Source Program in Tennessee on behalf of United States Environmental Protection Agency (U.S. EPA). This program provides funds for installing Best Management Practices (BMPs) to stop nonpoint source pollution; providing training, education, and demonstrations; and monitoring water quality. This program is non-regulatory; and, it promotes voluntary, incentive-based solutions. It is a cost-share program, paying for up to 60% of the cost of a project. It is up to the grantee to come up with the remaining 40%, usually in cash and "in-kind" services. In addition to 319 Grant funds, the State of Tennessee also has an Agricultural Resources Conservation (ARC) Fund, which provides additional monies for nonpoint source projects.

[3] Portions of the 319 Grant monies are provided to the Tennessee Department of Environment and Conservation (TDEC) for monitoring efforts used to formulate the 303(d) (impaired waterways) list. TDEC partners with TDA to assist with determining impaired streams, as well as establishing priority contaminants to focus reduction efforts. Outside the 319 Grant program, TDA has long-standing, well-defined partnership with TDEC for the reduction of nonpoint source and point source contamination from agricultural activities.

[4] 319 Grant money is dispensed to a number of additional State partners such as Soil Conservation Districts (SCDs), TDA's Division of Forestry, and the Tennessee Wildlife Resources Agency (TWRA). These partners then partition funds for a variety of smaller community-based projects to directly affect nutrient load reductions.

[5] Non-governmental Organizations (NGOs) such as watershed groups, conservation organizations, and educational entities receive 319 Grant funds for education, outreach, demonstration projects, and local watershed restoration project implementation.

[6] Although the United States Department of Agriculture (USDA) does not receive 319 Grant money, it is an important partner for achieving 319 goals. USDA, through Farm Bill initiatives, provides expertise, design assistance/guidance for Tennessee's ARC Fund, and additional funds. Many projects funded through cost-share with USDA complement the 319 program in that their implementation further reduces pollutant loads from agricultural activities. In addition, USDA cost-shares with TDA for the support of soil technician and grazing specialist positions in many counties.

In Tennessee, we are fortunate to have a state-funded program known as the Agricultural Resources Conservation Fund. The ARCF receives a variable amount of funds annually; usually between $3.5 and $5.5 million dollars per year. It was established primarily to provide cost-share assistance to fund the implementation of BMPs to correct NPS pollution problems on farms. We count a certain amount of this fund annually as match to our federal NPS grant from USEPA, and we consider all the work of the ARCF to be part of Tennessee's 319, or NPS program (but not 319(h)). That is just one example. Other examples of programs that would be considered 319, but not 319(h) are the work of the Tennessee Stream Mitigation Program (TSMP), an in-lieu fee program that mitigates degradation of waterways due to road construction and development; the USDA and county-funded Soil Conservation Districts that implement Farm Bill conservation programs all across the state; the Tennessee Wildlife Resources Agency's Private Lands Program that promotes buffer establishment for dual wildlife habitat/water quality purposes; and the Tennessee Department of Environment and Conservation's water quality monitoring process that deals with water bodies affected by NPS pollution.

Programs that are 319, but not 319(h), are critically important for helping meet load reduction and delisting goals, providing matching funds, stirring stakeholder interest, and driving momentum of the entire 319 (NPS) program forward. They also expand the reach of the TN-NPS program's statewide and watershed-based projects.

TN-NPS Program Partnerships

The TN-NPS program maintains informal relationships with many groups that represent local interests. The TN-NPS program will seek to continually build and strengthen partnerships with these groups for purposes of soliciting input into watershed planning, submitting proposals for grant funds, implementing projects, cultivating relationships with local landowners, and disseminating informational and educational materials.

The importance of building partnerships and coordinating efforts with local entities, watershed groups, and individual landowners cannot be emphasized enough in the challenge of addressing NPS pollution. It is these local groups who know their watersheds the best and have the most vested interests in maintaining or improving the quality and use of their water bodies. Having a locally led to improve water quality is critical for project success. Thus, the TN-NPS program will continue to honor existing partnerships and strive to build capacity in impaired watersheds that need projects by recruiting new partners.

The TN-NPS program relies on partnerships and collaboration with federal and state agencies, non-profit organizations, universities, local governments, and other stakeholders to implement the NPS Management Program (see Table 21). These agencies and organizations have been identified as partners of the TN-NPS program because they have received a grant from the TN-NPS program or because they signed an MOU/MOA with the TN-NPS program. These partnerships have resulted in implementation of statewide programs for forestry professionals (Master Logger), homeowners (Tennessee Smart Yards), teachers (Project WET), and local elected officials (Tennessee Growth Readiness), among others. They have also resulted in the implementation of

many watershed-based restoration projects where the partners construct/install BMPs, host field days, educational events, and evaluate success of their projects. In addition to the activities that the TN-NPS program has fostered and supported, NPS issues have been addressed by many other programs in Tennessee such as USDA Farm Bill Conservation Programs (EQIP, etc.), local soil conservation districts, UT Extension, and many cities and counties across the state.

TABLE 21: COOPERATING PARTNERS CONTRIBUTING TO STATEWIDE NPS POLLUTION MANAGEMENT

	Agriculture	Forestry	Urban	Failing Septic	Legacy Mining	Education	MOU or MOA in Place	Contract/Grant in Place
State Agencies								
Tennessee Department of Agriculture	X	X	X	X	X	X		X
Tennessee Department of Environment & Conservation	X	X	X	X	X	X	X	X
Tennessee Wildlife Resources Agency	X	X				X		X
Tennessee Department of Transportation			X			X		X
Soil Conservation Districts	X			X		X		X
Federal Agencies								
U.S. Environmental Protection Agency	X	X	X	X	X	X		X
USDA – Farm Services Agency	X							X
USDA – Natural Resource Conservation Service	X			X		X	X	X
Tennessee Valley Authority	X	X	X		X	X		X
U.S. Fish and Wildlife Service	X	X						X
U.S. Army Corp of Engineers	X	X						X
U.S. Geological Survey				X	X			X
Universities								
University of Tennessee, Institute of Agriculture	X	X	X	X		X		X
University of Tennessee, Water Resources Research Center	X		X	X	X	X		X
Middle Tennessee State University			X			X		X
Austin Peay State University						X		X
Tennessee Technological University			X			X		X
Other public and private universities	X	X	X	X		X		X
Local Government Agencies, Commissions, and Boards								
Municipalities			X	X		X		X
Counties	X		X	X	X	X		X
Development Districts			X			X		X
Nonprofit Organizations/501(c)(3) groups								
The Nature Conservancy (statewide)	X	X	X	X		X		X
Tennessee Environmental Council (statewide)	X	X	X	X		X		X
The Land Trust for Tennessee (statewide)	X							X

TABLE 21: COOPERATING PARTNERS CONTRIBUTING TO STATEWIDE NPS POLLUTION MANAGEMENT								
	Agriculture	**Forestry**	**Urban**	**Failing Septic**	**Legacy Mining**	**Education**	**MOU or MOA in Place**	**Contract/Grant in Place**
Local watershed groups	X	X	X	X	X	X		X
Resource Conservation and Development Councils	X			X		X		X
Tennessee Association of Conservation Districts	X							X
Membership Associations and Organizations								
Livestock Associations (beef, dairy, poultry, and pork)	X					X		X
Tennessee Farm Bureau	X							X
Tennessee Forestry Commission		X						X
Water Districts and Related Associations								
Tennessee Association of Utility Districts	X	X		X				X
Interagency Coordination Teams								
Gulf of Mexico Hypoxia Task Force	X			X				X
Tennessee Nutrient Reduction Strategy Workgroup	X			X				X
USDA-NRCS State Technical Committee	X	X		X	X	X		X
Tennessee Healthy Watersheds Initiative	X	X	X	X	X	X		X
Soil Health Working Group (USDA)	X							X

There would not be a statewide NPS program without this level of collaboration and cooperation from these stakeholders. In the same vein, there would not be many local watershed-based restoration projects if these partners did not exist or work alongside the TN-NPS program. If the watershed approach is going to be successful, and future projects are to be undertaken to restore waters where there has not been any success to date, then an even more expansive web of partners will need to be developed.

The TN-NPS program relies on two types of partners to meet the milestones of the program. The most important of these is the general public. Without the consent and enthusiasm of individual landowners, very few BMPs would ever be implemented. Yet, the general public cannot be convinced to participate in the implementation of BMPs without the outreach capabilities of conservation-minded agencies and organizations.

Staff members of these agencies and organizations provide the materials read by the landowner, operator, and citizen, while they possess the personal skills to relate to these individuals and motivate them as they convince them of the seriousness of the problem, their contribution to it, and the necessity for action.

These agencies and organizations also possess the capabilities of providing the design and implementation of the BMPs as well as the generation of educational materials.

FIGURE 21: RESTORATION PARTNERS

Through partnerships, the TN-NPS Program has the opportunity to fund statewide and watershed focused educational and BMP implementation projects. All BMP implementation projects will be required to incorporate public awareness components, where practical. Additional outreach projects including videos, posters, and brochures, the TDA web site, outdoor classrooms, Envirothon, Water Education for Tennessee Teachers and others, will help establish more partners among Tennesseans. The TN-NPS program staff will also attend many watershed stakeholder meetings where local citizens and professionals meet to exchange information and ideas as well as establish nonpoint source projects. These are typically hosted by TDEC and 3-4 occur each year in selected watersheds (8-digit HUC scale). In addition, TN-NPS program staff participation in partner meetings such as the Tennessee RC&D Council, Tennessee Association of Conservation Districts, Tennessee Stormwater Association, and the Tennessee Water Resources Symposium will provide the TN-NPS program opportunities to generate future projects.

Not All Partners are Created Equal

The TN-NPS program recognizes that it is more advantageous to partner with certain entities than with others when partnering with entities via a NPS grant contract. The primary significant factor is grant funds requested for salary. As a point of policy, the TN-NPS program prefers that grant funds go as much as possible towards on-the-ground BMP implementation. However, many entities feel the need to allocate relatively large amounts of grant funds to salaries, and other overhead costs (supplies, travel, indirect costs, etc.) Organizations that most frequently structure their budgets that way are non-profits and universities. We understand the necessity of supporting the organization, but generally view them as a less efficient partner. The most conservation goes on-the-ground when partnering with organizations/agencies who already have salaried staff and close to 100% of NPS grant funds go directly to pay for BMPs and targeted outreach in a local watershed. Organizations that are most often able to do that are soil conservation districts and local governments (cities and counties). For that reason, those type organizations rise to the top of our list of most efficient partners.

Another key factor to compare when considering various partners is additional funding they can bring to the project. On this point it is important to realize there are two types of money that can come from a partner. First is matching funds. These are cash or in-kind contributions from non-federal sources that can be used to match the NPS grant funds. In many of our projects, coming up with enough match is difficult so finding partners who can provide some matching dollars is critical to project success. The second type of money that can come from a partner is leveraged funds. Leveraged funds are additional federal funds that are available to assist the project because NPS grant funds initiated the project. However, since they are federal funds these funds cannot be counted as match for NPS grant projects. Still, they are very valuable because they stretch the NPS grant funds further and allow more restoration work or outreach to take place than would have taken place with NPS grant funds alone. While both types of outside funds are wonderful to have on hand, we generally put more value on matching funds simply because that is something we must have in order to fund projects in the first place.

Both of these issued related to partners, the amount of grant funds allocated to salaries/overhead costs and the amount of matching dollars provided, are key factors NPS staff considers in our prioritization and selection process (see Chapter 4 on Prioritization and Project Selection). The TN-NPS program will continue to look for partners who make the most efficient use of NPS grant funds, put the highest percentage of grant funds into BMP implementation, and who bring the most matching funds to the table.

References Cited:

Partnerships: Frameworks for Working Together, 2010. From the Series: *Strengthening Nonprofits: A Capacity Builder's Resource Library*. The Compassion Capital Fund (CCF), administered by the U.S. Department of Health and Human Services. CCF National Resource Center.

Chapter 6: Nonpoint Source Program Management

Effective Program Management Principles and Goals

Nonpoint Source Program Management

There are programmatic responsibilities that are essential to the success of the TN-NPS Program and the management of its grant projects. These responsibilities are partner development and outreach, project development, review, and selection, administrative/financial, and data management and reporting. The following sections describe how the TN-NPS Program will fulfill these responsibilities.

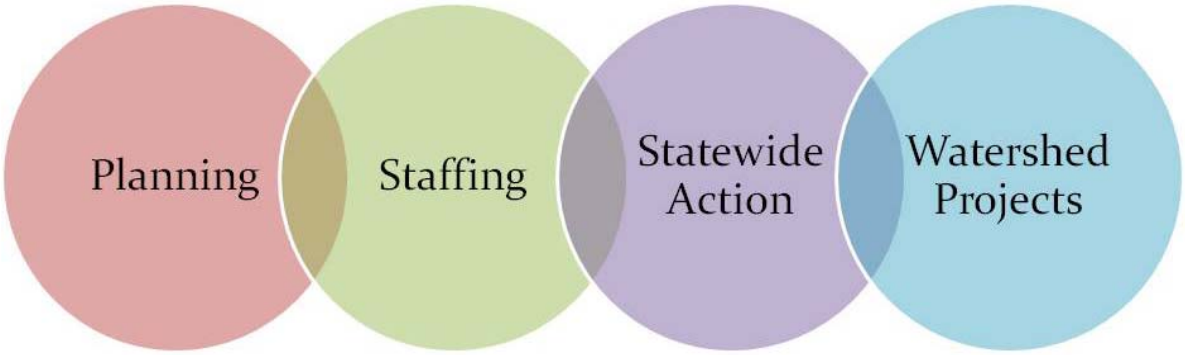
Federal Grant Requirements

Tennessee's 319 Program is committed to full compliance with all applicable program rules, regulations, policies, and guidance pertaining to nonpoint source grants. The primary regulations for state 319 programs are 40 CFR Parts 31 and 35(subpart A), and OMB Circulars A-87, A-102, and A-133. Additionally, depending on the type of organization that is receiving the grant from the state, there are other federal rules that apply to them. Tennessee is committed, as required, to informing our sub-recipients of the federal requirements they must meet. Our standard state contract templates that are developed by the Central Procurement Office of the Department of General Services assist with the precise language that is contained in each specific grant contract. Additionally, as directed by the 2014 Guidance, Tennessee is committed to assisting EPA with their responsibility to see that subgrants comply with EPA's Assistance Administration Manual 5700, Part 2, Section 01, *Subawards Under EPA Assistance Agreements*. Also, Tennessee will assist EPA as needed so that compliance with Grants Policy Issuance 12-06, *Timely Obligation, Award, and Expenditure of EPA Grant Funds*, and Grants Policy Issuance 11-01, *Managing Unliquidated Obligations and Ensuring Progress under EPA Assistance Agreements* can be achieved. At the state level, our program develops an annual Sub-Recipient Monitoring Plan, which is used by TDA auditors to make visits to 319 Program and other grantees to review their books and records to ensure compliance with the terms of their respective contracts. A copy of the Sub-Recipient Monitoring Plan can be found in Appendix G.

Additionally, the 2014 EPA Nonpoint Source Grant Guidance expresses the following program goal pertaining to Program Management for each state's 319 Program:

Effective state NPS programs supported by § 319 maintain and improve water quality by reflecting a balance between planning, staffing, statewide action, and watershed project implementation that best utilizes resources to deliver measurable water quality results (Figure 22). Information on each of these areas will be provided to EPA with each annual 319 workplan.

FIGURE 22: FUNDED ACTIVITIES



Annual Calendar

The TN-NPS Program maintains an annual calendar of important deadlines and submittal dates for efficient program administration. The Annual Calendar is summarized below, and Figure 23 provides a quick-reference of important dates:

January

- Receive feedback from TDA Watershed Coordinators and TDEC Environmental Field Offices (EFOs) by January 20th.
- Make final funding decisions by January 31st.

February

- Notify all applicants of the funding decisions by February 7th.
- Enter all information from the previous fiscal year into the GRTS database by February 15th.

March

- Enter and update all grant data in GRTS by March 30th.
- Evaluate all project closeouts for the current fiscal year, and provide appropriate reminders of the contract end date by March 31st.

September

- Send reminders to all grantees regarding the 2X4 Annual Report submission deadline by September 1st.
- Release the Request for Proposals (RFPs) and press release by September 1st.
- 2X4 Annual Report submissions are due to TDA by September 15th.
- Submit new 319 grant application by September 30th.
- Enter and update all grant data in GRTS by September 30th.

October

- Send Closeout Report reminder letters to all grantees with contract closeouts by October 7th.
- Begin work on the 319 Annual Report and Closeout Report.

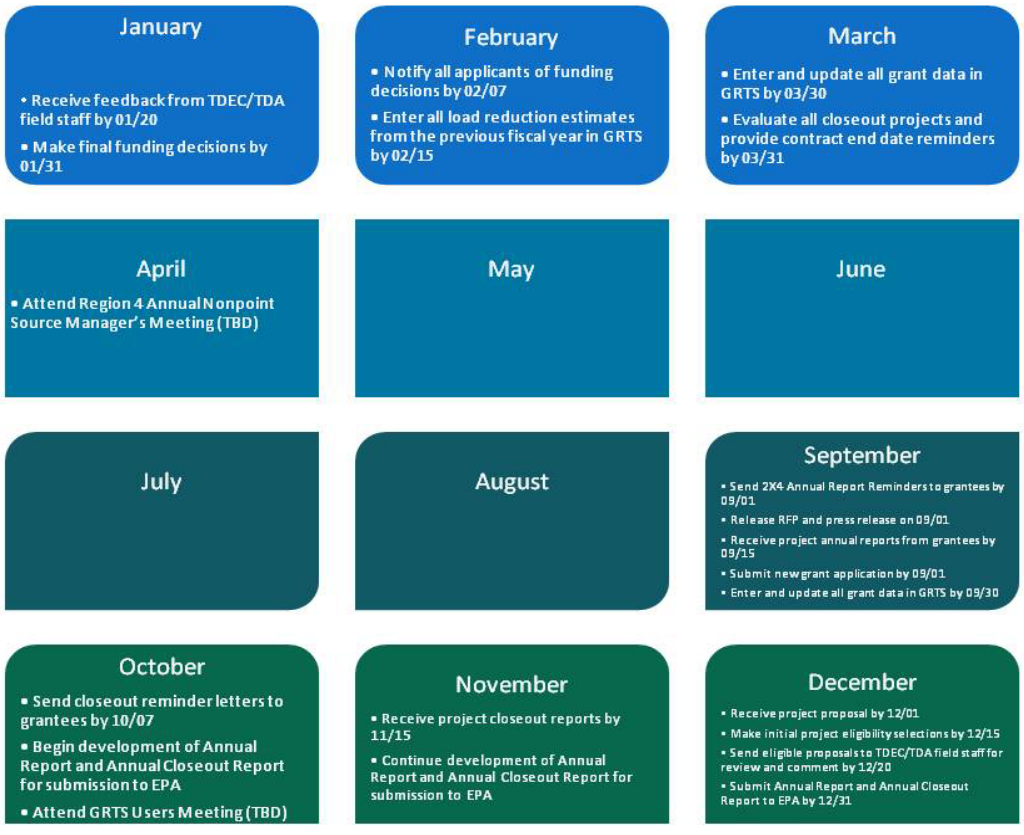
November

- Project Closeout Reports due to TDA by November 15th.
- Continue work on 319 Annual Report and Closeout Report.

December

- 319 project proposals are due by December 1st.
- Evaluate proposal submissions and determine initial decisions on eligibility by December 15th.
- Send eligible proposals to TDEC/TDA field staff for evaluation and comment by December 20th.
- 319 Annual Report and Grant Closeout Report due to EPA by December 31st.

FIGURE 23: ANNUAL CALENDAR QUICK REFERENCE



Communications with USEPA and Partners

These responsibilities require routine communication with EPA. There are several means to achieve this, which are:

- Being familiar with the current EPA NPS guidance
- Attending the regional program managers/coordinators meeting where these topics are discussed
- Participate in regional conference calls with EPA and state staff

The most significant document for ensuring our partners submit a quality proposal is the TN-NPS Request for Proposals, which can be found in Appendix D or on the web at:

http://www.tn.gov/agriculture/water/nps.shtml

Once a 319 proposal has been submitted, it goes through an evaluation process which involves TDA staff and field office managers from TDEC. Projects are then scored and selections are made. The proposal then is edited into a work plan, and the TN-NPS Program will send a state contract to the grantee for signature. Once the grantee and the commissioner of TDA sign the contract and the proper processing has occurred, the state contract will be official. The grantee is then bound to the letter of the contract and work plan. Because the state contract is a tool used to ensure the completion of a grant agreement between the state of Tennessee and the United States government, the TN-NPS Program will ensure that all work delineated in the original work plan is performed. After the contract is executed, the 319 Program Manager and other appropriate personnel schedule a meeting with the grantee to educate them regarding all requirements pertaining to the execution of the contract.

The grantee will be required to submit Progress Reports accompanied by invoices to indicate the amount of 319 funding they need to receive as reimbursement for services rendered. Contractors will be required to provide statements indicating how the actions of these expenditures satisfy their project milestones. Reimbursement requests will be reviewed to determine if costs submitted are allowable, and if the matching percentages are correct. For all restoration projects, 319 field staff will coordinate with the grantee to perform a site visit and verify the work has been accomplished prior to processing a reimbursement request.

As the 319 and matching funds are spent, the TN-NPS Program will track the remaining balance as well as submit milestone accomplishments to EPA via the Grants Reporting and Tracking System (GRTS). The TN-NPS Program will submit to EPA an annual report detailing the accomplishments of the contracted projects.

Once the project has ended, the grantee will be required, within 45 days of the completion date, to submit a grant closeout report. This report will summarize all that has been accomplished within the project, how it benefited water quality, and what lessons have been learned. After this report is reviewed by TN-NPS Program, it will be submitted to EPA along with the other project closeout

reports included in that grant. Once approved, the grant activity for the particular year is completed.

The state will submit reports via GRTS each year as required and will submit an annual report by the deadline each fiscal year. When a grant has expired, the state will submit final closeout report to EPA within 90 days.

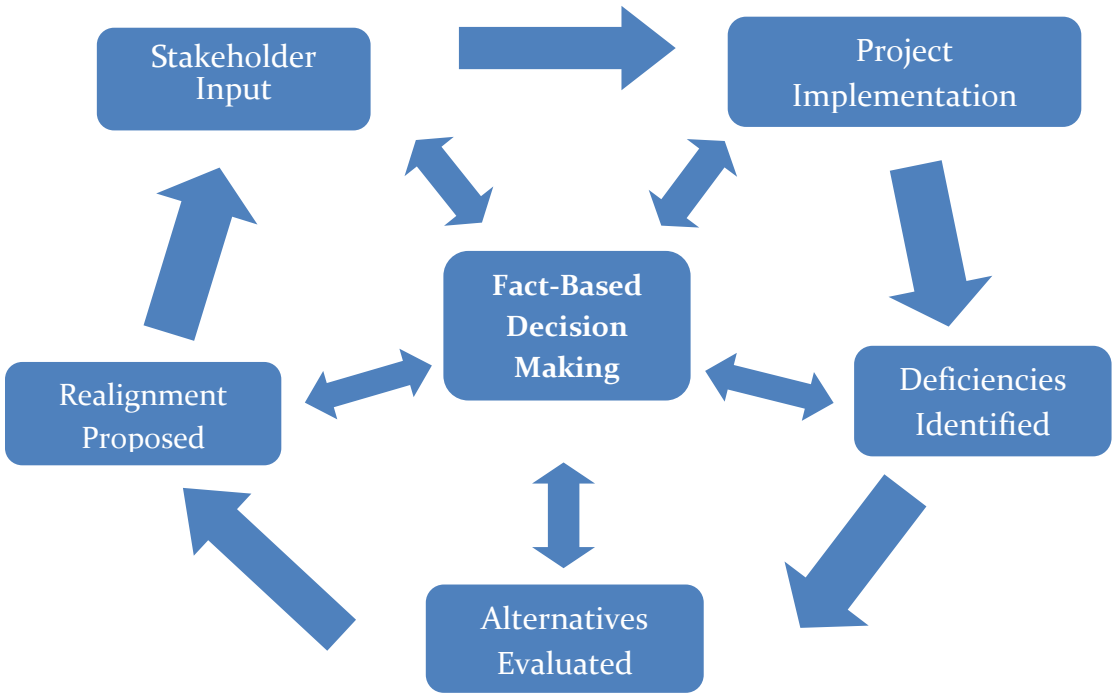
Adaptive Management

Adaptive management is a structured decision-making process. Adaptive management techniques allow program administrators to make decisions in circumstances where several unknowns or uncertainties are present, in order to both reduce the uncertainty and learn about the program simultaneously.

The TN-NPS Program will routinely assess programmatic functions to evaluate and address their efficiency and effectiveness. Where improvements can be made that will cause more clarity and efficiency to partners and/participants, changes will be implemented. Partners and participants will be provided with the opportunity to submit feedback about what works – and what doesn't work – with the current TN-NPS Program through an annual survey.

Adaptive management is particularly well-suited for implementation in environmental programs. It integrates program management, project design, and outcome monitoring in order to learn the best methodology. Adaptive management relies on feedback obtained from successes and failures of conservation practices to adjust recommendations and on-the-ground BMPs (Open Standards for the Practice of Conservation, Version 3.0, 2013).

FIGURE 24: ADAPTIVE MANAGEMENT TECHNIQUE



Adaptive management is an on-going process, and measurable success is difficult to measure over relatively short periods of time. Success for Long Term Goal No. 4 will be determined by meeting the milestones below:

- **Review and update of the Management Program Document every five years**
- **Respond to grantees' requests for information within three business days**
- **Provide an annual request for feedback from grantees and partners**

Annual Program Management Goals and Outputs

The following annual goals for Program Management will ensure the TN-NPS Program meets Long Term Goal #6, listed on Page 72.

Annual Goal 1:

TN-NPS program will do everything necessary to achieve "Satisfactory Progress" determination by USEPA each year.

TN-NPS Program staff will comply with all terms and conditions as laid out in the annual EPA grant award by ensuring that all projects approved for funding meet the appropriate criteria for eligibility, and that proper progress reporting is completed. Success for this annual milestone will be measured by achieving a 100 percent compliance rate for the grant award's terms and conditions as indicated in Section 319(h)(8).

Annual Goal No. 2

TN-NPS program will submit an Annual Report by December 31 each year.

TN-NPS Program staff will prepare an Annual Report, summarizing the previous year's 319 grant recipients' activities. The Annual Report will include information on a range of topics from project descriptions to quantitative reductions in pollutant loads in various watersheds. Completion of the Annual Report and submission on or prior to the December 31st deadline, will be used as the indicator of success.

Annual Goal No. 3

TN-NPS program will submit a Grant Application by September 30 each year.

TN-NPS will submit a Grant Application which follows all USEPA guidance and requirements, by September 30th each fiscal year.

Annual Goal No. 4

TN-NPS program will submit an Annual Workplan by May 31 each year.

TN-NPS will submit an annual workplan that details the projects awarded, goals for the upcoming fiscal year, and desired outcomes (such as reduction in pollutant loads) from on-the-ground projects to be implemented.

Annual Goal No. 5

All grant data will be entered in the Grants Reporting and Tracking System (GRTS) by the various deadlines given each year.

All updates and new data entry for the load reductions on waters in which 319 projects are being implemented is to be completed by February 15th of each year. Information regarding bmp installation and project progress is required to be entered and updated by March 30th and September 30th of each year. TN-NPS Program staff will perform all necessary data management by the required deadlines. Success for this annual milestone will be measured by the completion of load reduction data by February 15th, and the entering of project information by March 30th and September 30th of each year.

Annual Goal No. 6

All grant funds received will be obligated within one year of the date the grant is received.

TN-NPS Program staff will award all 319 grant recipients through state contracts within 12 months of receiving 319 funding. If contracts with sub recipients cannot be finalized within the 12 month period, the award will be vacated, and the monies will be funded to an alternate partner/project. Written confirmation of funds disbursement will be provided to the Program Officer no later than one year and 30 days from the award date. Successfully placing all funds under State contracts within 12 months from the date EPA awards the 319 grant, and notification of funds allocation within one year and 30 days, will be considered fulfillment of this milestone.

Grants will be awarded to as many new projects as funds and proposal quality allows. The overriding principal is to supply funding to a wide variety of projects, while still providing enough resources to support the goals of our partners. The TN-NPS Program has set a tentative goal of funding no fewer than eight projects per year. It is important to note that if the quality of the proposals for a particular year is subpar, it may be necessary to reduce the number of projects to receive funding. Short Term Goal No. 6 will be successfully implemented if new projects are funded based on the grant award amount and the excellence of the proposals received for consideration.

The deadline for submission of proposals for 319 funding is December 1st of each year. Each year, TN-NPS Program staff will evaluate, rank, and award proposals submitted for consideration. Recipients will be notified no later than June 1st of their grant amount. A second indicator of the success of Short Term Goal No. 6 will be determined by successfully completing the proposal evaluation process and notifying grant recipients on or before June 1st of each year.

Annual Goal No. 7

Each grant received from USEPA will be matched my no less than 40% by a combination of state and local funds.

TN-NPS uses state funding, especially ARCF, to match 319 grant monies. In addition, various partners and landowners also provide cost-share to match the 319 dollars for project implementation.

Annual Goal No. 8

TN-NPS staff will attend the annual GRTS users meeting each year.

A representative from TN-NPS, familiar with GRTS data entry and maintenance, will attend the annual GRTS users meeting annually.

Annual Goal No. 9

TN-NPS staff will attend the National Nonpoint Source Managers meeting as often as it is held.

A representative from TN-NPS will attend the National Nonpoint Source Managers meeting whenever it is held in order to obtain new information on national trends, new management techniques, etc.

Annual Goal No. 10

TN-NPS staff will attend the Regional Nonpoint Source Managers meeting as often as it is held.

A representative from TN-NPS will attend the Regional Nonpoint Source Managers meeting.

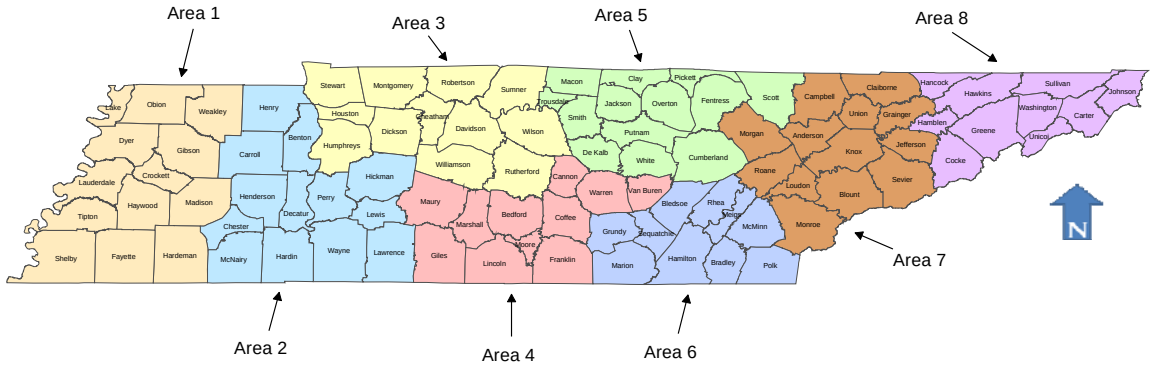
Annual Goal No. 11

TN-NPS program will revise the Management Program Document every 5 years, or as required by USEPA.

Staffing within TN-NPS

TDA Nonpoint program staff currently consists of 13.5 FTEs, five and one half are located at the Ellington Agricultural Center offices, and eight FTEs are Watershed Coordinators located across the state as shown in Figure 25.

FIGURE 25: TDA WATER RESOURCES WATERSHED COORDINATORS



Staff job classifications are as follows:

TABLE 22: STAFF JOB CLASSIFICATIONS

Employee Job Classification	FTE	Position Title	Job Duties
Environmental Program Manager 2	1	TDA-Water Resources Administrator	Accountable for all TDA Water program goals
Environmental Assistance Program Manager 1	1	319 Program Manager	Responsible for achieving goals of the 319 Program
Environmental Specialist 4	1	Data Mgmt, GIS, GRTS Coordinator	GRTS commitments
Environmental Specialist 3	9	8-Field Watershed Coordinators, 1-HQ Project Manager	Technical Assistance, citizen complaint site visits
Administrative Services Assistant	1	Grants Analyst	Accounts payable, contracts and data
Accounting Technician 2	0.5	Accounts Specialist	Accounts payable, contracts and data

Administrative and Financial

Activities pertaining to the administration of the 319 Grant Program include:

- Development and submittal of the annual grant application;
- Creation and processing of a grant contract for each project;
- Processing reimbursements to each grantee for work performed;
- Development of a sub-recipient monitoring plan (see Appendix G) in support of the Single Audit Act of 1984 with amendments, as detailed in OMB Circular A-133; and,
- Performing routine financial monitoring of grantees in conformance with the annual sub-recipient monitoring plan.

GIS Data Management

Within Tennessee's Nonpoint Source Program, a Geographic Information System or GIS plays an integral part. The creation and maintenance of geospatial information and data is accomplished through use of software by Environmental Systems Research Institute, Inc. (ESRI) known as Arc Map for desktop. GIS is used to develop and generate maps and data presentations for staff, soil districts, and educational purposes. Best Management Practice (BMP) site areas are entered into NPS Program's Microsoft Access Computer Database and then mapped through conversion to a geodatabase. Both 319 and ARCF programs use GIS to produce maps, analysis, and mapping products. The 319 BMPs are also mapped in GRTS or EPA's Grant Reporting Tracking System creating drainage areas in the Environmental Results tab section of the program.

Imagery and data layers such as roads, city and county boundaries, 8 to 12 digit HUC Watershed boundaries, statewide parcel data, and historical ortho-imagery, are used daily in the NPS Program to assess the needs of the program. TDEC's Water Quality Assessment layer for stream and lakes is one of many data layers used in everyday assignments overseeing projects. NPS has access to data servers such as Forestry, TDEC land areas, TVA lands, and TWRA Wildlife Management Areas as well as the state's massive data library.

Our GIS staff is a member of the Tennessee Geographic Information Council that was established in 1994. They sponsor annual conferences through East, West, and Middle Tennessee. Our GIS Coordinator attends these meetings as well as the State User's Group meetings and has worked on committees involving these groups.

The TDA- NPS Program has a cooperative agreement with the USDA-NRCS to have access to data on all Farm Bill-funded projects. This agreement can be found in Appendix K. Having access to this data can be useful in determining why there are changes to water quality occurring in certain watersheds.

Chapter 7: Adhering to EPA Guidance and Satisfying the Key Elements of an Effective Nonpoint Source Management Program

Measuring the success of a management program

Introduction to Program Management

Program management can be defined as the steering of several related projects to increase the success of an organization. Program management should focus on creating a culture/set of standards to which individual project managers adhere (Brown, 2008). The overall program management coordinates individual and specific projects to achieve strategic goals and objectives (Sanghera, 2008). The TN-NPS Program fits this description, as it attempts to manage multiple nonpoint source-related projects simultaneously to improve water quality in the State of Tennessee. The goal of the TN-NPS Program management is to construct a framework for successful projects, provide oversight of projects in-progress, and periodically reassess the program structure to adapt to systematic changes. Figure 26 provides a graphical representation of the program management-project management interaction

Key Components of an Effective Management Program

In November of 2012, the Environmental Protection Agency (EPA) distributed updated guidance for Nonpoint Source (NPS) Management Programs. In the guidance, eight key elements of an effective management program are discussed:

1. The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.
2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.
3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well integrated with other relevant state and federal programs.
4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.

Key components of an effective management program, cont.

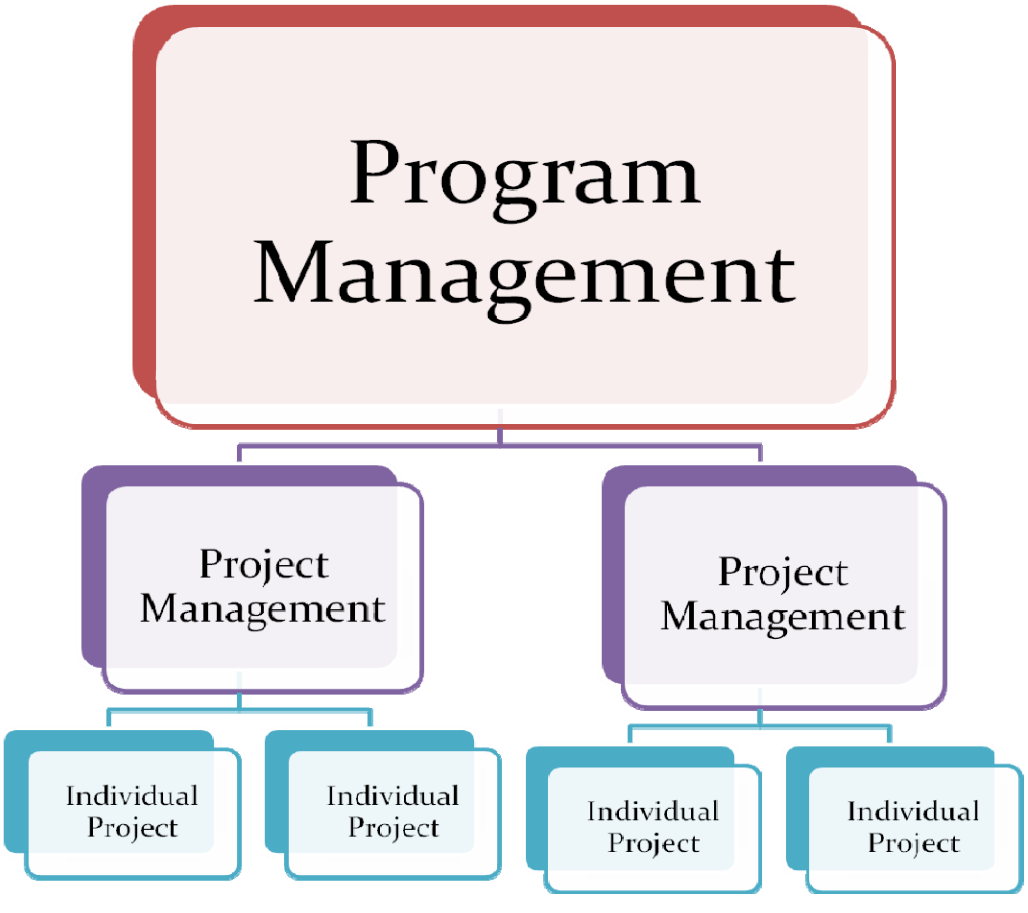
5. The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.

6. The state implements all program components required by Section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed.

7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.

8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

FIGURE 26: PROGRAM MANAGEMENT HIERARCHY



Crosswalk between 2014 U.S.EPA Nonpoint Source Program Guidance and TN-NPS Management Program

In order to satisfy the criteria for an effective state nonpoint source management program as presented in EPA's 2012 guidance, the TN-NPS Program has developed a matrix. The matrix identifies key components of the management program, where information about each component can be located within the Program Management Plan, and which Annual Milestones and Long Term Goals support each component. The matrix can be found in Table 23 below.

TABLE 23: Index of TN-NPS Management Program Compliance with 2014 USEPA Guidance

Component	Status	Citation(s)	Deviation from Federal Requirements
Key Component No. 1: The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.	Pending; the current management program proposes explicit annual- and long-term goals which are currently pending EPA review/approval.	• Chapter 1, Pg. 5 • Chapter 2, Pg. 34–36, 43-45, 50-52, 58-60, and 68-70 • Chapter 3, Pg. 72-74 and 77-85 • Chapter 6, Pg. 111–112 • Appendix C	None
Key Component No. 2: The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.	Current management program exceeds all requirements; additional activities are on-going.	• Chapter 1, Pg. 8 • Chapter 3, Pg. 79-82 • Chapter 5, Pg. 96-104	None
Key Component No. 3: The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well integrated with other relevant state and federal programs.	Current management program meets all requirements.	• Chapter 3, Pg. 72-74 • Chapter 5, Pg. 98-103 • Chapter 6, Pg. 108-109	None

TABLE 23: EPA EVALUATION OF THE 319 MANAGEMENT PROGRAM PLAN			
Component	**Status**	**Citation(s)**	**Deviation from Federal Requirements**
Key Component No. 4: The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts	Pending; the current management program proposes changes to include a greater focus on protective projects which are currently pending EPA review/approval. Implementation is scheduled to begin in FY2014.	• Chapter 3, Pg. 72-74, 77-78, and 86-87 • Chapter 4, Pg. 91-95	None
Key Component No. 5: The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.	Pending; the current management program proposes a method for identifying priority watersheds which is currently pending EPA review/approval. Implementation is scheduled to begin in FY2014.	• Chapter 1, Pg. 6 • Chapter 4, Pg. 85-95 • Appendix E	None

TABLE 23: EPA EVALUATION OF THE 319 MANAGEMENT PROGRAM PLAN			
Component	**Status**	**Citation(s)**	**Deviation from Federal Requirements**
Key Component No. 6: The state implements all program components required by Section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed.	Current management program meets all requirements.	• Chapter 3, Pg. 72, 84-85 • Chapter 6, Pg. 105-114	None
Key Component No. 7: The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.	Current management program meets all requirements.	• Chapter 3, Pg. 72, 84-85 • Chapter 5, 104 • Chapter 6, Pg. 105-114	None
Key Component No. 8: The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.	Pending; the program management indicates review and revision of the management program every five years. Implementation is scheduled to begin in FY2014.	• Chapter 1, Pg. 4 • Chapter 3, 85 • Chapter 6, Pg. 109-110	None

Conclusion

By integrating sector-specific short- and long-term goals with programmatic goals (Annual Milestones and Long Term Goals), the TN-NPS management program will be able to meet or exceed the expectations stated by the EPA's 2012 guidance. Periodic review of overall program success will assist in determining which goals need to be revised, added, or omitted in order to maximize efficiency and achieve the desired results. Figure 27 provides graphical representation of the interactions between the various indicators of success and program management. The TN-NPS Program will continue to assess goals and strategies for improving water quality throughout Tennessee.

By integrating sector-specific goals and programmatic goals, the management program is able to meet or exceed expectations.

References Cited

Brown, James T., 2008. The handbook of program management: how to facilitate project success with optimal program management. McGraw-Hill: New York, NY.

Environmental Protection Agency, 2012. Section 319 Guidance: Key Components of an Effective State Nonpoint Source Management Program. Available online at: http://water.epa.gov/polwaste/nps/upload/key_components_2012.pdf.

Sanghera, Paul, 2008. Fundamentals of Effective Program Management: A Process Approach Based on the Global Standard. J. Ross Publishing, Inc.: Fort Lauderdale, FL.

Appendix A

STATE OF TENNESSEE
DEPARTMENT OF HEALTH AND ENVIRONMENT
CORDELL HULL BUILDING
NASHVILLE, TENNESSEE 37219

April 25, 1989

Mr. Greer C. Tidwell
Regional Administrator
United States Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, GA 30365

RE: Nonpoint Source Water Pollution Management Program for the State of Tennessee

Dear Mr. Tidwell:

As required by Section 319(b)(2)(D) of the Water Quality Act of 1987, I am writing as lead counsel for the Tennessee Department of Health and Environment a letter of certification that the laws of the State of Tennessee provide adequate authority to implement the Nonpoint Source Water Pollution Management Program as developed by the Tennessee Department of Health and Environment (the "Department").

It is my opinion that the authority of the Department for maintaining water quality would adequately encompass the successful implementation of Tennessee's Nonpoint Source Management Program which has been developed pursuant to Section 319 of the Water Quality Act of 1987, codified at 33 U.S.C. § 1329. The Department is responsible for the implementation of the Tennessee Water Quality Control Act of 1977, Tennessee Code Annotated Section 69-3-101 et seq. The stated policy and purpose of the Department vis-a-vis water quality is found in T.C.A. Section 69-3-102 as follows:

> (a) Recognizing that the waters of Tennessee are the property of the state and are held in public trust for the use of the people of the state, it is declared to be the public policy of Tennessee that the people of Tennessee as beneficiaries of this trust, have a right to unpolluted waters. In the exercise of its public trust over the waters of the state, the government of Tennessee has an obligation to take all prudent steps to secure, protect, and preserve this right.
>
> (b) It is further declared that the purpose of this part is to abate existing pollution of the waters of Tennessee, to reclaim polluted waters, to prevent the future pollution of the waters, and

> to plan for the future use of the waters so that the water resources of Tennessee might be used and enjoyed to the fullest extent consistent with the maintenance of unpolluted waters.

Further, the Commissioner of the Department of Health and Environment is empowered by T.C.A. Section 69-3-109(1) to

> ...exercise general supervision and control over the quality of all state waters, to administer and enforce all laws relating to pollution of such waters, and to administer and enforce this part, and all standards, policies, rules, and regulations promulgated hereunder... .

The above policy and purpose is enhanced by Governor Ned R. McWherter's designation of the Department as the lead agency for the Nonpoint Source Management Program. A copy of Governor McWherter's letter is attached. The general and specific authority presently vested in the Department to carry out the Tennessee Water Quality Control Act of 1977 should be sufficient to allow the necessary regulatory oversight of the Nonpoint Source Management Program. Tennessee's Water Quality Control Act requires a permit for the following activities which include nonpoint source activities:

T.C.A. § 69-3-108:

(a) Every person who is or is planning to carry on any of the activities outlined in subsection (b) of this section, other than a person who discharges into a publicly owned treatment works or who is a domestic discharger into a privately owned treatment works, or who is regulated under a general permit as described in subsection (j) of this section, shall file an application for a permit with the commissioner or, when necessary, for modification of his existing permit.

(b) It shall be unlawful for any person, other than a person who discharges into a publicly owned treatment works or a person who is a domestic discharger into a privately owned treatment works, to carry out any of the following activities, except in accordance with the conditions of a valid permit:

(1) The alteration of the physical, chemical, radiological, biological, or bacteriological properties of any waters of the state;

(2) The construction, installation, modification, or operation of any treatment works or part thereof, or any extension or addition thereto;

(3) The increase in volume or strength of any wastes in excess of the permissive discharges specified under any existing permit;

(4) The development of a natural resource or the construction, installation, or operation of any establishment or any extension or modification thereof or addition thereto, the operation of which will or is likely to cause an increase in the discharge of wastes into the waters of the state or would otherwise alter the physical, chemical, radiological, biological or bacteriological properties of any waters of the state in any manner not already lawfully authorized;

(5) The construction or use of any new outlet for the discharge of any wastes into the waters of the state;

(6) The discharge of sewage, industrial wastes or other wastes into waters, or a location from which it is likely that the discharged substance will move into waters;

(7) The discharge of sewage, industrial wastes, or other wastes into a well or a location that is likely that the discharged substance will move into a well, or the underground placement of fluids and other substances which do or may affect the waters of the state.

One concern which was noted in your comments to Commissioner J. W. Luna was stated at III. D., page 4 as follows:

> "The program appears to be based primarily on voluntary implementation of BMPs. If this approach proves effective, it is preferred. However, the State should be prepared to use its authorities to assure that the State water quality standards are met."

The Department is somewhat limited in the enforcement action as to nonpoint sources of pollution by Section 69-3-120(g) and (h) of the Water Quality Control Act of 1977 which states:

> (g) Nothing whatsoever in this part shall be so construed as applying to any agricultural or forestry activity or the activities necessary to the conduct and operations thereof or to any lands devoted to the production of any agricultural or forestry products, unless there is a point source discharge from a discernible, confined, and discrete water conveyance.
>
> (h) The passage of "The Water Quality Control Act of 1977" shall grant no new authority over non-point sources to the department of health and environment which was not previously established by "The Water Quality Control Act of 1971." In all cases of conflict between the provisions of this part and the provisions of §§ 68-13-101 - 68-13-108 (the Sanitary Engineering Law) the provisions of this part shall take precedence [Acts 1971, ch. 164, § 19; 1977, ch. 366 §§ 1, 3; T.C.A., § 70-342.]

However, in the past, the Department has been successful in pursuing enforcement against nonpoint source polluters via judicial action to abate a public nuisance. The Water Quality Act of 1977, Section 69-3-114 states:

"It shall be unlawful for any person to discharge any substance into the waters of the state or to place or cause any substance to be placed in any location where such substances, either by themselves or in combination with others, cause any of the damages as defined in Section 69-3-103(22), unless such discharge shall be due to an unavoidable accident or unless such action has been properly authorized. Any such action is declared to be a public nuisance."

Section 69-3-103(22):

"Pollution means such alteration of the physical, chemical, biological, bacteriological, or radiological properties of the waters of the state including but not limited to changes in temperature, taste, color, turbidity, or odor of the water:

(A) As will result or will likely result in harm, potential harm or detriment of the public safety, or welfare;

(B) As will result or will likely result in harm, potential harm or detriment to the health of animals, birds, fish, or aquatic life;

(C) As will render or likely render the waters substantially less useful for domestic, municipal, industrial, agricultural, recreational, or other reasonable uses; or

(D) As will leave or will likely leave the waters in such condition as to violate any standards of water quality established by the board;"

Pursuant to Tennessee Code Annotated 29-3-101(1), "Nuisance" is defined as meaning that which is declared to be such by other statutes (i.e. T.C.A. Section 69-3-114) in addition to the specific listings of nuisances under T.C.A. Section 29-3-101. Jurisdiction to abate public nuisances is conferred by T.C.A. Section 29-3-102 which states:

"The jurisdiction is hereby conferred upon the chancery, circuit, and criminal courts to abate the public nuisances defined in § 29-3-101, upon petition in the name of the state; upon relation of the attorney general, or any district attorney general, or any city or county attorney, or without the concurrence of any such officers, upon the relation of ten (10) or more citizens and freeholders of the county wherein such nuisances may exist, in the matter herein provided."

Therefore, it is my opinion that the laws of the State are adequate to implement the proposed Nonpoint Source Management Program.

Sincerely,

William L. Penny
General Counsel
Tennessee Department of Health and Environment

WLP/GS/E4019103

Enclosure

3318A-2

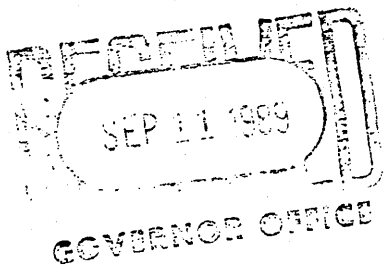
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

SEP - 1 1989

WMD-WQMB



Honorable Ned McWherter
Governor of Tennessee
State Capitol
Nashville, Tennessee 37219

Dear Governor McWherter:

The Nonpoint Source (NPS) assessment report and management program you have submitted to the Environmental Protection Agency (EPA) set forth a strategy for Tennessee to carry out the Congressional intent of Section 319 of the Water Quality Act of 1987 (WQA). The documents reflect input from a range of local, state and federal agencies who will join together to address nonpoint source water quality problems in Tennessee. During the 1987 legislative session, Congress placed special emphasis on NPS by establishing a national policy stating that:

> "...programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner..."

It has taken a long time and significant effort to get point source pollution under control. We recognize that controlling NPS pollution will take equal or greater effort.

In our letter to Mr. J. W. Luna, Commissioner, Health and Environment, dated January 30, 1989, I suggested certain additions and modifications to your draft NPS documents in order to make them consistent with the requirements of the WQA. I believe that the final, revised assessment report that you have submitted for the State of Tennessee meets the basic requirements of the Act; and therefore, I approve it. It provides an assessment of NPS-related water quality in the State. Further, it identifies data gaps and provides plans to address these assessment needs, demonstrating your recognition that the NPS program must be a dynamic program, subject to refinement as additional information becomes available.

The federal nonpoint source program is based on voluntary implementation of best management practices as is the State's management program. However, this Agency's experience, nationwide, suggests that state and local regulatory programs may be necessary in the future to ensure full implementation of nonpoint source controls. The existing exemptions of agricultural and silvicultural activities under the Tennessee Water Quality Act [Sec. 69-3-120(g)] could pose serious limitations on the implementation of the management program.

Nevertheless, I have determined that Tennessee's management program meets the basic intent of the WQA, and I hereby grant approval. I believe that state nonpoint source management programs will serve as the cornerstone for NPS pollution control in years to come.

I have asked my staff to continue to work with Tennessee to develop additional milestones which capture the nationally recognized themes for NPS action: Public Awareness, Successful Solutions, Financial Forces and Incentives, Regulatory Programs, and Good Science (EPA NPS Agenda for the Future, January 1989, copy enclosed). Such milestones should lay the framework for an implementable program to improve water quality in Tennessee.

Approval of these documents represents the beginning of an ongoing process. As appropriate, Tennessee, as well as all states in Region IV, must continue to improve and update its NPS assessment report and management program. My staff will be available to assist your program managers and staff with this process. As necessary additions and modifications are identified, these may be reflected in future EPA grant conditions and work plan reviews.

Over the coming years, we must continue our work together to forge an alliance with the private sector, fellow public agencies, industry, and academic institutions to clean up and protect the Nation's waters from NPS pollution.

Sincerely yours,

Lee A. Dehihns III, for

Greer C. Tidwell
Regional Administrator

Enclosure

State of Tennessee

NED McWHERTER
GOVERNOR

January 6, 1995

Mr. John H. Hankinson, Jr.
Regional Administrator
U.S. Environmental Protection Agency, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Hankinson:

In accordance with the amended Clean Water Act and the Water Quality Act of 1987, Section 319, I am hereby designating the Tennessee Department of Agriculture as the lead agency for continued development and implementation of the Nonpoint Source Water Pollution Management Program under Section 319. This will not affect the remainder of the Federal Clean Water Act programs in the Department of Environment and Conservation.

The Department of Agriculture offers a great opportunity to continue progress in the management of nonpoint source issues. Please feel free to contact the office of Commissioner L. H. "Cotton" Ivy, Tennessee Department of Agriculture, as we proceed with reassignment of the Section 319 Program. We appreciate your assistance in this effort.

Sincerely,

Ned McWherter

NM:rw

xc: L. H. "Cotton" Ivy, Commissioner, Tennessee Department of Agriculture
J. W. Luna, Commissioner, Tennessee Department of Environment and Conservation

TENNESSEE DEPARTMENT OF AGRICULTURE

Dan Wheeler
Commissioner

Don Sundquist
Governor

MEMORANDUM

TO: **Dan Wheeler, Commissioner**

FROM: **Peggy Williams, Chief Counsel**

RE: **Certification Of Tennessee State Laws As Adequate Authority To Implement The 319 Nonpoint Source Pollution Management Program - As Revised**

DATE: **January 9, 1996**

By letter of former Governor of the State of Tennessee, Ned McWherter, dated January 6, 1995, the Tennessee Department of Agriculture is designated as the lead agency for continued development and implementation of the Nonpoint Source Water Pollution Management Program under Section 319.

Pursuant to the provisions of Section 319, (b)(2)(D) of the Water Quality Act of 1987, and as lead counsel for the Tennessee Department of Agriculture, I am writing this Memorandum to certify that I have reviewed the applicable laws of the State of Tennessee and affirm that such laws are adequate legal authority to implement the actions developed by the plan. Those laws were set forth and explained in detail in the original certification letter, dated April 25, 1989, signed by William L. Penny, then General Counsel for the Tennessee Department of Health and Environment which developed the original management program. Those laws still apply and are consistent with the purpose and intent of the revised plan and the authority and duties of the Tennessee Department of Agriculture.

PFW/s
xc: Mike Countess
Jim Nance
Greg Upham

Ellington Agricultural Center, Box 40627 Melrose Station, Nashville, TN 37204
Telephone (615) 360-0103 Fax (615) 360-0333

Appendix B

Tennessee Department of Agriculture (TDA) and Natural Resources Conservation Service (NRCS)
Standard Practices Cross-Reference

TDA Practice Code	Practice Name	Status	NRCS Name
001	I&E	TDA only	
002	Partial Payment with another practice	TDA only	
003	TN Partners	TDA only	
004	Sinkhole Protection	TDA only	527 Sinkhole and Sinkhole Area Treatment
005	Acid Mine Reclamation	TDA only	
006	Septic Improvements	TDA only	
007	Rain Garden	TDA only	
008	Native Grass Garden	TDA only	
203	Agriculture Chemical Handling Facility	see 309	
310	Bedding	Same	
312	Waste Mgt. System	TDA only	
313	Litter Storage Bldg.		Waste Storage Facility
315	Herbaceous Weed Control		
316	Animal Mortality Facility	Same	
317	Composter		Composting Facility
320	Irrigation Canal or Lateral	Same	
322	Channel Bank Vegetation	Same	
324	Chiseling and Subsoiling		Deep Tillage
326	Clearing and Snagging	Same	
327	Conservation Cover	Same	
328	Conservation Crop Rotation	Same	
329	Conservation Tillage	TDA only	Residue and Management, No-Till/Strip Till/Direct Seed
331	Contour Orchard & Other Fruit Area		Contour Orchard & Other Perennial Crops
332	Riparian Buffer		Contour Buffer Strips
335	Controlled Drainage	TDA only	
338	Prescribed Burning	Same	
340	Winter Cover		Cover Crop
342	Critical Area Planting	Same	
344	Crop Residue Use		Residue Management, Seasonal
348	Dam, Diversion	Same	
349	Dam-Multiple Purpose	TDA only	
350	Sediment Basin	Same	
352	Deferred Grazing	TDA only	
354	Delayed Seedbed Prep.	TDA only	
356	Dike	Same	
359	Waste Treatment Lagoon	Same	
362	Diversion	Same	
378	Pond	Same	
380	Farm & Feedlot Windbreak		Windbreak/Shelterbelt Establishment
382	Fence	Same	
386	Field Border	Same	
388	Irrigation Field Ditch	Same	
391	Riparian Forest Buffer	Same	
392	Field Windbreak	TDA only	
393	Filter Strip	Same	
394	Firebreak	Same	
395	Fish Stream Improvement		Stream Habitat Improvement & Management
397	Commercial Fishponds		Aquaculture Ponds
398	Fish Raceway or Tank	Same	

Tennessee Department of Agriculture (TDA) and Natural Resources Conservation Service (NRCS)
Standard Practices Cross-Reference

TDA Practice Code	Practice Name	Status	NRCS Name
399	Fishpond Management	Same	
400	Floodwater Diversion	TDA only	
402	Dam-Floodwater Retarding		Dam
404	Floodway	TDA only	
408	Forest and Erosion Control	TDA only	
409	Forest Land Management	TDA only	
410	Grade Stabilization Structure	Same	
411	Grasses/Legumes Rotation	TDA only	
412	Grassed Waterway	Same	
422	Hedgerow Planting	Same	
423	Hillside Ditch	Same	
425	Waste Storage Pond	TDA only	
428	Irrigation Ditch/Canal		Irrigation Ditch Lining
430	Irrigation Pipeline	TDA only	
436	Irrigation Storage Reservoir		Irrigation Reservoir
441	Irrigation Trickle		Irrigation System, Microirrigation
442	Irrigation Sprinkler		Irrigation System, Sprinkler
443	Irrigation Surface and Below		Irrigation System, Surface & Subsurface
447	Irrigation Tailwater Recovery		Irrigation System Recovery
449	Irrigation Water Management	Same	
451	Land Fire Control	TDA only	
452	Land Shaft and Adit Closing	TDA only	
453	Land Landslide Treatment		Land Reclamation, Landslide Treatment
454	Land Subsidence Treatment	TDA only	
455	Land Toxic Discharge Control		Land Reclamation, Toxic Discharge Control
456	Land Highwall Treatment	TDA only	
460	Land Clearing	Same	
462	Precision Land Forming	Same	
464	Irrigation Land Leveling	Same	
466	Land Smoothing	Same	
468	Lined Waterway or Outlet	Same	
472	Livestock Exclusion		Access Control
482	Mole Drain	Same	
484	Mulching	Same	
490	Woodland site preparation		Tree/Shrub Site Preparation
500	Obstruction Removal	Same	
510	Pasture & Hayland Management	TDA only	
511	Forage/soil sample		Forage Harvest Management
512	Pasture and Hayland Establishment		Forage and Biomass Planting
516	Pipeline	Same	
521	Pond Sealing and Lining	**NRCS has 3 types**	a - flexaible membrane b- Soil dispersant c- Bentonite
522	Pasture Renovation	TDA only	
527	Sinkhole Area Treatment	004 Sinkhole Protection	
528	Prescribed Grazing	Same	
530	Proper Woodland Grazing	TDA only	
532	Pumped Well Drain	TDA only	
533	Pumping Plant-Water Control		Pumping Plant
543	Land Reconstruction, Abandoned Mined		Land Reclamation, Abandoned Mined Land

Tennessee Department of Agriculture (TDA) and Natural Resources Conservation Service (NRCS)
Standard Practices Cross-Reference

TDA Practice Code	Practice Name	Status	NRCS Name
544	Land Reconstruction, Current Mine		Land Reclamation, Currently Mined Land
548	Grazing Land Mechanical Treatment	Same	
550	Range Seeding		Range Planting
552	Irrigation Pit/Reservoir		Irrigation Regulating Reservoir
554	Regulate Water-Drain System		Drainage Water Management
555	Rock Barrier	Same	
556	Planned Grazing Systems	TDA only	
557	Row Arrangement	Same	
558	Roof Runoff Management		Roof Runoff Structure
560	Access Road	Same	
561	Heavy Use Area		Heavy Use Area Protection
562	Recreation Area Improvement	Same	
566	Recreation Land Grading and Shaping	Same	
568	Recreation Trail & Walkway		Trails and Walkways
570	Runoff Management System	Same	
571	Soil Salinity Management	TDA only	
572	Spoil Spreading	Same	
574	Spring Development	Same	
575	Stock Trails/Walkways		Animal Trails & Walkways
576	Stream Crossing	2 of these 728	
578	Limited Stream Access		Stream Crossing
580	Streambank & Shoreline Protection	Same	
582	Open Channel	Same	
584	Stream Channel Stability		Channel Stabilization
585	Stripcropping - Contour		Stripcropping
586	Stripcropping - Field	TDA only	
587	Structure for Water control	Same	
589	Stripcropping - Wind		589a Cross Wind Ridges
590	Nutrient Management	Same	
595	Pest Management		Integrated Pest Management
600	Terrace	Same	
606	Subsurface Drain	Same	
607	Surface Drain, Field Ditch	Same	
608	Surface Drain, Main or Lateral	Same	
609	Surface Roughening	Same	
610	Toxic Salt Reduction	Same	Salinity and Sodic Soil Management
612	Tree Planting		Tree/Shrub Establishment
614	Trough or Tank		Watering Facility
620	Underground Drain		Underground Outlet
630	Vertical Drain	Same	
633	Waste Utilization	Same	
636	Water Harvesting Catchment	Same	
638	Water & Sediment Control Basin	Same	
640	Waterspreading	Same	
641	Water Table Control	TDA only	
642	Well		Water Well
644	Wildlife Wetland Mgmt		Wetland Wildlife Habitat Mgt
645	Wildlife Upland Area Mgmt		Upland Wildlife Habitat Mgt
646	Shallow Water Development and Managementt for Wildlife	Same	

Tennessee Department of Agriculture (TDA) and Natural Resources Conservation Service (NRCS)
Standard Practices Cross-Reference

TDA Practice Code	Practice Name	Status	NRCS Name
648	Wildlife Watering Facility	Same	
650	Windbreak Renovation		Windbreak/Shelterbelt Renovation
652	Woodland Direct Seeding	TDA only	
654	Woodland Improved Harvest	2 of these	NRCS has a different 654
654	Road/Trail/Landing Closure and Treatment	2 of these	TDA has a different 654
657	Wetland Restoration	Same	
660	Woodland Pruning		Tree/Shrub Pruning
666	Woodland Improvement		Forest Stand Improvement
720	Construction of Retention Pond	TDA only	
728	Stream Crossing	2 of these 576	
769	Incinerator	TDA only	
901	Urban Catch Basin	TDA only	
902	Urban Catch Basin - Oil	TDA only	
903	Urban Catch Basin - Sand	TDA only	
904	Urban Concrete Grid	TDA only	
905	Urban Extended Detention Pond	TDA only	
906	Urban Filtration Basin	TDA only	
907	Urban Grassed Swale	TDA only	
908	Urban Infiltration Basin	TDA only	
909	Urban Infiltration Trench	TDA only	
910	Urban Porous Pavement	TDA only	
911	Urban Stormwater Wetland	TDA only	
912	Urban Vegetated Filter	TDA only	
913	Urban Wet Pond	TDA only	
914	Urban Stormwater Treatment Device	TDA only	
312a	Waste Management System for Poultry	TDA only	
312b	Waste Management System for Swine	TDA only	
312c	Waste Management System for Dairy	TDA only	
312d	Waste Management System for Beef	TDA only	
312e	Waste Management System- Incinerator	TDA only	
317a	Composting Facility for Poultry	TDA only	
317b	Composting Facility for Swine	TDA only	
317c	Composting Facility for Dairy	TDA only	
317d	Composting Facility for Beef	TDA only	
329a	Residue Management No-Till & Strip Till	Same	
378a	Pond for Rotational Grazing System	TDA only	
378b	Pond for Livestock Exclusion System	TDA only	
378c	Pond for Livestock Exclusion and Rotational Grazing	TDA only	
382a	Fencing for Livestock Exclusion	TDA only	
382b	Fencing for Heavy Use Area	TDA only	
382C	Fencing for Critical Area Treatment	TDA only	
382D	Fencing for Rotational Grazing System	TDA only	
382e	Fencing for Livestock Exclusion and Rotational Grazing	TDA only	
390a	Riparian Herbaceous Buffer as Cropland Conversion	TDA only	
390b	Riparian Herbaceous Buffer	TDA only	

Tennessee Department of Agriculture (TDA) and Natural Resources Conservation Service (NRCS)
Standard Practices Cross-Reference

TDA Practice Code	Practice Name	Status	NRCS Name
390c	Riparian Herbaceous Buffer as streambank restoration	TDA only	
391a	Riparian Forest Buffer as Cropland Conversion	TDA only	
391b	Riparian Forest Buffer with Filter Strip	TDA only	
391c	Riparian Forest Buffer as streambank restoration	TDA only	
512a	Cropland Conversion	TDA only	
512b	Pasture or Hayland Renovation	TDA only	
528a	Prescribed Rotational Grazing	TDA only	
614a	Alternative Watering System Public Water Source	TDA only	
614b	Alternative Watering System Spring Source	TDA only	
614c	Alternative Watering System Well Source	TDA only	
614d	Alternative Watering System Pond Source	TDA only	
614e	Alternative Watering System Creek Source	TDA only	

Tennessee Department of Agriculture (TDA) and Natural Resources Conservation Service (NRCS)
Standard Practices Cross-Reference

NRCS Exclusive Practices (no TDA companion practice)		
NRCS Code	**NRCS Name**	**Comments**
309	Agrichemical Handling Facility	see code 203
311	Alley Cropping	
314	Brush Management	
315	Herbaceous Weed Control	
329b	Residue Management, Mulch	
329c	Residue Management, Ridge Till	
330	Contour Farming	
345	Residue and Tilage Management, Mulch Till	
346	Residue and Tillage Management, Ridge Till	
353	Monitoring Well	
351	Well Commissioning	
355	Well Water Testing	
360	Closure of Waste Impoundments	
365	Anaerobic Digesters, Ambient	
366	Anaerobic Digesters, Controlled	
367	Waste Facility Cover	
370	Atmospheric Resource Quality Management	
371	Air Filtration and Scrubbing	
372	Combustion System Improvement	
373	Dust Control on Unpaved Roads & Surfaces	
379	Multi-Story Cropping	
381	Silvopasture Establishment	
383	Fuel Break	
384	Forest Slash Treatment	
390	Riparian Herbaceous Cover	
396	Fish Passage	
430	Irrigation Pipeline	
431	Above Ground, Multi-Outlet Pipeline	
432	Dry Hydrant	
450	Anionic Polyacrylamide (PAM) Application	
457	Mine Shaft & Adit Closing	
521A	Pond Sealing or Lining, Flexible Membrane	
521B	Pond Sealing or Lining, Soil Dispersant	
521C	Pond Sealing or Lining, Bentonite Sealant	
521D	Pond Sealing or Lining, Compacted Clay Treatment	
588	Cross Wind Ridges	
589c	Cross Wind Trap Strips	
591	Amendments to the Treatment of Agricultural Waste (AU)	
592	Feed Management	
603	Herbaceous Wind Barriers	
601	Vegetative Barrier	

Tennessee Department of Agriculture (TDA) and Natural Resources Conservation Service (NRCS)
Standard Practices Cross-Reference

NRCS Code	NRCS Name	Comments
629	Waste Treatment	
632	Solid/Liquid Waste Separation Facility	
635	Vegetated Treatment Strip	
634	Waste Transfer	
643	Restoration and Management of Rare and Declining Habitats	
647	Early Successional Habitat Development/Management	
654	Road/Trail/Landing Closure and Treatment	
655	Forest Trails & Landings	
656	Constructed Wetland	
658	Wetland Creation	
659	Wetland Enhancement	

Appendix C

Measures of Success Checklist

Aggregate/Statewide Goals

Date of evaluation: _____

Name of evaluator: _____

Measures of Success			
Long Term Goal	**Short Term Measure(s) of Success**	**Status**	**Comments**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	• Restore 2 water bodies per year, on average.	□ Met □ Exceeded □ Needs improvement	
	• Reduce N load by 5,000 lbs/year; P_2O_5 load by 5,000 lbs/year; and sediment load by 100 ton/year (minimum reductions)	□ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	• TDA-NPS staff will attend/participate in at least 10 educational events each year.	□ Met □ Exceeded □ Needs improvement	
	• Fund at least 20 educational events each year, depending on the number of active NPS pollution educational projects funded.	□ Met □ Exceeded □ Needs improvement	
	• Document at least 2,000 citizens presented with messages addressing NPS pollution sources, problems, and solutions each year.	□ Met □ Exceeded □ Needs improvement	
	• Develop a general evaluation form to be completed by all participants and the conclusion of each educational event.	□ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal No. 3: Build capacity for future TDA-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	• TDA-NPS staff will attend at least 8 stakeholder meetings each year to promote the TDA-NPS program and recruit and cultivate new partners for future projects. • TDA-NPS program will conduct an annual survey of partners, seeking their input for ways our program can improve and better meet existing needs. • TDA-NPS staff will provide assistance (as requested) in writing Watershed Based Plans; particularly map-making and load reduction estimates. • TDA-NPS program will improve information and tools available on our website to aid in the writing of Watershed Based Plans. • TDA-NPS staff will attend at least 3 stakeholder meetings or workshops to promote the 319 program each year.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal No. 5: Protect unimpaired/ high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	• Consider funding at least 1 project proposal aimed at protection of unimpaired water body each year, dependent upon nature of proposals received. • Consider changes to TN-NPS proposal evaluation scoresheet to impact the likelihood of water body protection projects receiving funding.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	• TN-NPS program will do everything necessary to achieve "Satisfactory Progress" determination by USEPA each year. • TN-NPS program will submit an Annual Report by December 31 each year. • TN-NPS program will submit a Grant Application by September 30 each year. • TN-NPS program will submit an Annual Workplan by May 31 each year. • All grant data will be entered in the Grants Reporting and Tracking System (GRTS) by the various deadlines given each year. • All grant funds received will be obligated within one year of the date the grant is received. • Each grant received from USEPA will be matched my no less than 40% by a combination of state and local funds.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal 6, cont.	• TN-NPS staff will attend the annual GRTS users meeting each year	□ Met □ Exceeded □ Needs improvement	
	• TN-NPS staff will attend the National Nonpoint Source Managers meeting as often as it is held.	□ Met □ Exceeded □ Needs improvement	
	• TN-NPS staff will attend the Regional Nonoint Source Managers meeting as often as it is held.	□ Met □ Exceeded □ Needs improvement	
	• TN-NPS program will revise the Management Program Document every 5 years, or as required by USEPA.	□ Met □ Exceeded □ Needs improvement	

If the short term has been met or exceeded, please provide an explanation of how this was determined (i.e. list of objectives completed, activities performed, etc.):

If the short term has not been met, please provide an explanation of the variance:

Signature of Evaluator

Measures of Success Checklist

Agricultural Sector Short Term Goals

Date of evaluation: _____

Name of evaluator: _____

Measures of Success			
Long Term Goal	**Short Term Measure(s) of Success**	**Status**	**Comments**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	• Fund no less than 3 projects each year that address agricultural sources of NPS pollution, depending on the number and quality of proposals received. • Fund the implementation of no less than 65 agricultural BMPs per year. • Staff Watershed Coordinators will perform no less than 200 site visits each year to inspect BMPs pre-, during-, and post-construction.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	• TDA-NPS staff will attend/participate in at least 4 educational events each year targeting an agricultural audience. • Fund at least 5 educational events targeting an agricultural audience. • Document at least 600 citizens presented with messages addressing NPS pollution sources, problems, and solutions. • Respond to 100% of Animal Feeding Operations complaints. • Direct AFO owner/operators to NRCS for mitigation, as necessary.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal No. 3: Build capacity for future TDA-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	• TDA-NPS staff will attend at least 8 stakeholder meetings each year to promote the TDA-NPS program and recruit and cultivate new partners for future projects. • TDA-NPS program will conduct an annual survey of partners, seeking their input for ways our program can improve and better meet existing needs. • TDA-NPS staff will provide assistance (as requested) in writing Watershed Based Plans; particularly map-making and load reduction estimates. • TDA-NPS program will improve information and tools available on our website to aid in the writing of Watershed Based Plans.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 5: Protect unimpaired/ high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	N/A	
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	• Not Applicable - grant award obligations are not defined by pollutant sector.	N/A	

If the short term has been met or exceeded, please provide an explanation of how this was determined (i.e. list of objectives completed, activities performed, etc.):

If the short term has not been met, please provide an explanation of the variance:

_____

Signature of Evaluator

Measures of Success Checklist

Forestry Sector Short Term Goals

Date of evaluation: _____

Name of evaluator: _____

Measures of Success			
Long Term Goal	**Short Term Measure(s) of Success**	**Status**	**Comments**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	• Fund no less than 1 forestry-based project each year, depending on the number and quality of proposals received. • Fund the implementation of no less than 5 forestry BMPs each year, depending on the number of active forestry restoration projects.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	• TDA-NPS staff will attend/participate in at least 1 educational event each year targeting a forestry audience. • Fund at least 3 educational events each year targeting a forestry audience, depending on the number of active projects aimed at forestry issues. • Document at least 200 citizens presented with messages addressing NPS pollution concerns stemming from forestry-related activities.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal No. 3: Build capacity for future TDA-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	• TDA-NPS staff will attend at least 1 stakeholder meeting (e.g., TN Forestry Association or the TN Urban Forestry Council) each year to promote the TDA-NPS.	□ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 5: Protect unimpaired/ high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	N/A	
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	• Not Applicable - grant award obligations are not defined by pollutant sector.	N/A	

If the short term has been met or exceeded, please provide an explanation of how this was determined (i.e. list of objectives completed, activities performed, etc.):

If the short term has not been met, please provide an explanation of the variance:

_____

Signature of Evaluator

Measures of Success Checklist

Urban Sector Short Term Goals

Date of evaluation: _____

Name of evaluator: _____

Measures of Success			
Long Term Goal	**Short Term Measure(s) of Success**	**Status**	**Comments**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	• Fund no less than 2 projects focused on stormwater issues in developed areas each year, depending on the number and quality proposals received. • Fund no less than 12 stormwater BMPs each year, depending on the number of active urban/suburban restoration projects. • Staff Watershed Coordinators will perform no less than 15 site visits each year to inspect various stormwater BMPs pre-, during-, and post-construction.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	• TDA-NPS staff will attend/participate in at least 3 educational events each year targeting an urban/surburban audience. • Fund at least 10 educational events each year targeting an urban/suburban audience, depending on the number of active projects aimed at urban/surburban. • Document at least 1,000 citizens presented with messages addressing NPS pollution concerns stemming from stormwater in urban/suburban areas.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal No. 3: Build capacity for future TDA-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	• TDA-NPS staff will attend at least 2 stakeholder meetings each year to promote the TDA-NPS program. • TDA-NPS staff will attend the annual meeting of the Tennessee Stormwater Association (TNSA) each year.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 5: Protect unimpaired/ high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	N/A	
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	• Not Applicable - grant award obligations are not defined by pollutant sector.	N/A	

If the short term has been met or exceeded, please provide an explanation of how this was determined (i.e. list of objectives completed, activities performed, etc.):

If the short term has not been met, please provide an explanation of the variance:

_____

Signature of Evaluator

Measures of Success Checklist

Failing Septic Sector Short Term Goals

Date of evaluation: _____

Name of evaluator: _____

Measures of Success			
Long Term Goal	**Short Term Measure(s) of Success**	**Status**	**Comments**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	• Fund the repair/replacement of no less than 20 failing septic systems each year, depending on the number of active projects that address failing septic systems.	□ Met □ Exceeded □ Needs improvement	
	• Staff Watershed Coordinators will perform no less than 20 site visits each year to inspect work on repair/replacement of failing septic systems.	□ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	• TDA-NPS staff will attend/participate in at least 1 educational event each year targeting an audience with failing septic concerns.	□ Met □ Exceeded □ Needs improvement	
	• Fund at least 1 educational event each year targeting an audience concerned with NPS pollution from failing septic systems.	□ Met □ Exceeded □ Needs improvement	
	• Document at least 100 citizens presented with messages addressing NPS pollution concerns stemming from failing septic systems.	□ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal No. 3: Build capacity for future TDA-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	• TDA-NPS staff will attend at least 1 stakeholder meeting each year to promote the TDA-NPS program.	□ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 5: Protect unimpaired/ high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	N/A	
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	• Not Applicable - grant award obligations are not defined by pollutant sector.	N/A	

If the short term has been met or exceeded, please provide an explanation of how this was determined (i.e. list of objectives completed, activities performed, etc.):

If the short term has not been met, please provide an explanation of the variance:

_____

Signature of Evaluator

Measures of Success Checklist

Legacy Mining Sector Short Term Goals

Date of evaluation: _____

Name of evaluator: _____

Measures of Success			
Long Term Goal	**Short Term Measure(s) of Success**	**Status**	**Comments**
Long Term Goal No. 1: Restore impaired water bodies (i.e., those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.	• Fund no less than 1 project addressing legacy mining concerns each year, depending on the number and quality of proposals received. • Fund no less than 5 BMPs addressing legacy mining concerns each year, depending on the number of active legacy mining projects. • Staff Watershed Coordinators will perform no less than 5 site visits each year to inspect legacy mining BMPs pre-, during-, and post-construction, depending on the number of active legacy mining projects	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 2: Build citizen awareness of problems and solutions related to nonpoint source pollution through local and statewide education efforts targeting various audiences.	• TDA-NPS staff will attend/participate in at least 1 educational event each year targeting an audience dealing with legacy mining concerns. • Fund at least 1 educational event each year targeting an audience concerned with NPS pollution from legacy mining activities. • Document at least 100 citizens presented with messages addressing NPS pollution concerns stemming from legacy mining activities.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	

Long Term Goal	Short Term Measure(s) of Success	Status	Comments
Long Term Goal No. 3: Build capacity for future TDA-NPS projects in local watersheds by engaging stakeholders and potential partners through outreach and personal contact.	• TDA-NPS staff will attend at least 1 stakeholder meeting each year to promote the TDA-NPS program.	□ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 4: Track interim progress towards restoration of impaired water bodies.	• Develop a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts. • Implement a sector-based tracking mechanism for BMP implementation, educational activities, pollutant load reductions, and capacity building efforts.	□ Met □ Exceeded □ Needs improvement □ Met □ Exceeded □ Needs improvement	
Long Term Goal No. 5: Protect unimpaired/ high quality waters (i.e., those not on the 303(d) list) by implementing appropriate BMPs where warranted.	• Not applicable - projects to protect unimpaired waters by definition will not be assigned to any pollutant source.	N/A	
Long Term Goal No. 6: Fulfill all obligations under grant award agreement with USEPA annually.	• Not Applicable - grant award obligations are not defined by pollutant sector.	N/A	

If the short term has been met or exceeded, please provide an explanation of how this was determined (i.e. list of objectives completed, activities performed, etc.):

If the short term has not been met, please provide an explanation of the variance:

_____

Signature of Evaluator

Appendix D

TENNESSEE DEPARTMENT OF AGRICULTURE
NONPOINT SOURCE PROGRAM
REQUEST FOR PROPOSALS FY 2014

The Tennessee Department of Agriculture Nonpoint Source Program (TDA-NPS) is seeking project proposals for funding with grants provided by the United States Environmental Protection Agency (USEPA) under section 319(h) of the Clean Water Act.

Who Can Apply?

Local governments, interstate agencies, nonprofit organizations and institutions, colleges and universities, and agencies of state government are eligible to apply.

Deadline for Submittal of Proposals

The deadline for submittal is: December 1, 2013

TDA-NPS Priorities

The highest priority for funding are projects that target waters of the state assessed as impaired from nonpoint source (NPS) pollution and published in the most recent edition of the 303(d) list by the Tennessee Department of Environment and Conservation (http://www.state.tn.us/environment/water/water-quality_publications.shtml). The project's objective should be to identify the specific sources of NPS pollution and seek to eliminate them so that the water fully supports its designated uses. Preference is given to projects targeting small watersheds, where measurable water quality improvements are most likely to result after the project is completed.

No watershed restoration project (i.e., BMP implementation) can be funded with a 319 grant unless it is based on an approved **watershed-based plan (WBP)** developed for that particular watershed. The requirement of a WBP can be fulfilled simply by following the WBP format in Attachment A. You can submit both the WBP and a proposal simultaneously as a single application for funding (If you do submit them together, please submit them as two, separate documents). Refer to Attachments A and B for more information on Watershed-Based Plans.

Projects focusing on NPS education and training are also eligible to receive funding. Educational projects can attempt to have a broad, statewide effect on all citizens of Tennessee or can target a specific group. Any such project must focus on raising awareness of NPS issues and/or attempt to inform decision-making processes in order to reduce NPS impacts to waters.

Evaluation Criteria

All projects are initially reviewed to ensure that they meet eligibility requirements before being fully considered for funding. Eligible project proposals are then evaluated by state agencies from both a statewide as well as a local/regional perspective. All eligible projects are reviewed in detail and rated according to many criteria. As this is a competitive situation, ratings are totaled and projects are ranked from high score to low. Beyond this attempt to rank projects in an objective manner, there remains a certain degree of subjectivity as to which projects are finally selected to receive funds.

The highest priority of the TDA-NPS program is to implement conservation practices known as Best Management Practices (BMPs) and educational programs/materials that result in reduction of nonpoint source pollution to targeted, impaired waterbodies to such a significant degree that they are likely to be removed from the state's list of impaired waters (303d list) in the short-term. To that end, in evaluating proposals, preference is given to projects that minimize 319 funds allocated to salaries and benefits for personnel, and instead maximize 319 funds spent for actual, on-the-ground work – BMPs and educational programs/materials.

Because of this emphasis, proposals that limit the amount of 319 grant funds allocated to **both** salaries and benefits of employees of the grantee **and** all subcontracted personnel charges for technical assistance/design/consulting to a maximum of **25%** of total 319 funds requested will be much more competitive when evaluated for funding. In order to expedite evaluation of proposals, please calculate and fill in the box for Personnel Costs on the top of page 11 when you submit a proposal.

Project Match

The maximum percentage of the total project cost supplied by the grant is normally 60%. The remaining 40% match can be monetary funds or in-kind donation of labor and/or materials from any non-federal source. In order to determine the amount of match required, multiply the amount of grant funds requested by 0.6667. This product is the minimum 40% match. All matching dollars must be spent within the dates of the contract and must be directly related to one or more project tasks as described in the proposal. The total project cost will be the sum of the grant funds requested plus the calculated match value. The Match Table (under *Project Budget Tables* – pg. 11) must list the source, type, and amount/value (cash, in-kind labor, in-kind materials, etc.) of the matching funds. As mentioned previously, federal funds or in-kind services from a federal source cannot be used as match. Associated federal projects may be described in the proposal, but must clearly be delineated as such and not included in the match totals.

Projects that involve the installation of BMPs on private lands will normally have a significant part of their match provided by in-kind support from the landowners. In these cases, approved BMPs will normally be reimbursed at 60 - 75% of the actual cost of

establishing the BMP, or up to 85% of the actual cost of BMPs in impaired watersheds, or the Maximum Cost Share Amount, whichever is less. However, if there is cost-share from another source the total amount of all cost-share shall not exceed 90% of the Total Estimated Cost. The Grantee may elect to cost-share at a lesser percentage, or to use another payment system such as flat rate per cooperator per year.

Reimbursement

This grant program is managed through a reimbursement process, which means expenses must be incurred on the project prior to grant funds being disbursed. Reimbursement can be made only for those expenses that are incurred within the term of a contract with TDA-NPS.

Project Length

Due to recent reductions in the term of Nonpoint Source grants from USEPA to the states, all TDA-NPS projects are limited in length of time to a maximum of three years. In practical terms, this means that no contract will be written for more than a 36-month term. Therefore, the schedule of activities or timeline included with your proposal should not be for more than thirty-six months. Also, please plan your tasks and budget with a 3-year grant term in mind.

Proposal Process

Refer to Attachment C for a template of the proposal that each applicant must submit to TDA-NPS for review and consideration. The format of your proposal **must** match this template. In general, a proposal includes a detailed description of the work to be done, tasks, budget, etc., specific to the project.

The preferred method of transmittal of proposals is through electronic mail. If e-mail is not available, please mail a copy of the proposal to the address listed below.

Sam Marshall
TDA - Nonpoint Source Program
Ellington Agricultural Center
424 Hogan Road
Nashville, TN 37220

The email address is: sam.marshall@tn.gov

If help is needed, or there are questions, please call Sam Marshall at 615-837-5306.

Miscellaneous Points for Consideration

- If the proposed budget requests grant funds for indirect costs, then the Grantee must submit to the State a copy of the indirect cost rate established by an independent audit or approved by the cognizant federal or state agency. The maximum allowable indirect cost rate, funded by 319(h), is **20%** of the direct cost line items.
- Items that may be considered "direct costs" are limited to the following budget line items: Salaries, Benefits, and Taxes of employees of the grantee; Supplies, etc. (e.g., cost of BMP materials and any other supplies or equipment that are purchased by the grantee solely as a result of this project); Travel, Conferences, and Meetings that is/are incurred solely in order to accomplish this project; and Capital Purchases of goods required by this particular project.
- Be aware that purchases of goods and acquisition of services using 319(h) program funds must follow State of Tennessee procurement policies as outlined in Attachment D.
- Please note that being paid from two different sources for the same hours worked is not allowed (i.e., "double-dipping"). For any individual receiving monetary compensation (e.g., regular salary) from the grantee and who is also seeking grant funds to cover salary, written documentation from the grantee stating the grantee's knowledge and approval of the employment situation and declaring no conflict of interest or double-dipping is occurring must be included with the proposal submitted to TDA. It is permissible for grant funds to pay for salary, but it must be clear that the grant funds are only for additional hours worked (on the project), beyond those the employee is normally paid for.
- For more information on the entire TDA-NPS program, please refer to the Management Program Document on the TDA website (At the time of writing this RFP, the Management Program Document is being revised, but the final version of the document will be available online as soon as it is approved.)

Enclosed are the following guides:

Attachment A: Watershed Based Plan format
Attachment B: Guidance on Watershed Based Plans
Attachment C: Proposal Outline including Budget Template and Instructions
Attachment D: Procurement Policy for Grant Contracts

ATTACHMENT A

Watershed Based Plan Format

(Please use the following sections and instructions to guide you as you write your Watershed Based Plan. These are the only sections that you need to include in your plan. Please use these headings. Follow the directions for each section, but do not provide information beyond what is below. We anticipate that each plan should be less than ten pages, not including supporting documents such as maps. Keep in mind that many times the scale, scope, and budget of a watershed based plan will be greater than that of the proposal you submit.)

Name of Project:

Lead Organization:

Watershed Identification (name, location, 12-digit HUC, etc.):

Causes and Sources of Nonpoint Source Pollution in the Watershed

Discuss all that is known about the water quality problems in the watershed. Use all local knowledge of the current land usages in the watershed, and how these contribute to the problems affecting water quality. These resources from TDEC may be helpful.

- Recent list of TDEC's assessment publications, including the latest 303(d) list and 305(b) Report - http://www.state.tn.us/environment/water/water-quality_publications.shtml
- Assessment Database - tnmap.tn.map/wpc/
- TMDLs - http://www.tn.gov/environment/water/water-quality_total-daily-maximum-loads.shtml
- Watershed Management Plans - http://www.state.tn.us/environment/water/watersheds/index.shtml

BMP List, Educational Activities and Budget

List all BMPs needed to protect or restore the watershed. Also, you must include quantity estimates, costs per unit, and calculate an estimated budget. Costs in this budget should be total costs for implementation or per event (i.e., do not differentiate between cost share funds and matching funds). Contact NRCS to get their State Average Cost List as a guide for how much individual practices should cost. In addition,

provide a narrative of a plan to involve as many landowners as possible in watershed restoration activities.

BMP Name	Quantity	Cost/Unit	Budget Estimate
*ex. Riparian Buffer	40 Ac	$1,000/ac	$40,000

Educational Event	Quantity	Cost/Unit	Budget Estimate

Total Budget for Project:	$

Timeline, Tasks, and Assessment of Progress

Provide a detailed outline of the estimated schedule for completing all watershed restoration and/or educational tasks. Also, describe how you intend to assess progress to ensure you stay on schedule and the adjustments to be made in order to get back on schedule if the timeline is not being met.

Monitoring and Documenting Success

No 319 funds may be spent on water quality monitoring supplies or activities. Instead, provide a statement of how this restoration project will coordinate with TDEC-Water Pollution Control Field Offices to inform them where restoration activities are being conducted, so that their watershed assessments can be scheduled to track progress of the restoration work. Also, define a set of criteria that can be used to determine whether substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan needs to be revised.

For a map of TDEC's Environmental Field Offices and the Water Pollution Control contacts in each Field Office, go to http://www.state.tn.us/environment/field-offices.shtml .

ATTACHMENT B

EPA Guidance on Watershed Based Plans

To ensure that Section 319 projects make good progress towards restoring waters impaired by nonpoint source pollution, a Watershed Based Plan must be completed and approved before installation of best management practices funded with Section 319 dollars. Watershed-based plans must follow the format demonstrated in Attachment A, above. This information is critical for ensuring the development of realistic plans to achieve protection goals or water quality standards. To the extent that necessary information already exists in other documents (e.g., various State and local watershed planning documents, TMDLs, or watershed plans developed to help implement conservation programs administered by USDA), the information may be incorporated by reference.

EPA recognizes the difficulty of developing the information described above with precision and, as this guidance reflects, believes that there must be a balanced approach to address this concern. On one hand, it is absolutely critical that a reasonable effort is made to identify the significant sources of pollution and identify the management measures that will most effectively address those sources. Without such information to provide focus and direction to the project's implementation, it is much less likely that the project can efficiently and effectively address the nonpoint sources of water quality impairments. On the other hand, EPA recognizes that even with reasonable steps to obtain and analyze relevant data, the available information at the planning stage (within reasonable time and cost constraints) may be limited; preliminary information and estimates may need to be modified over time, accompanied by mid-course corrections in the watershed plan; and it often will require a number of years of effective implementation for a project to achieve its goals. EPA fully intends that the watershed planning process described above should be implemented in a dynamic and iterative manner to assure that projects with plans that contain the information above may proceed even though some of the information in the watershed plan is imperfect and may need to be modified over time as information improves.

The watershed-based plan must address a large enough geographic area so that its implementation will address all of the sources and causes of impairments and threats to the waterbody in question. These plans should include mixed ownership watersheds when appropriate to solve the water quality problems (e.g., Federal, State, and private lands). While there is no rigorous definition or delineation for this concept, the general intent is to avoid single segments or other narrowly defined areas that do not provide an opportunity for addressing a watershed's stressors in a rational and economic manner. At the same time, the scale should not be so large as to minimize the probability of successful implementation. Once a watershed plan is approved, it may be implemented in prioritized portions (e.g., based on particular segments, other geographic subdivisions, nonpoint source categories in the watershed, or specific pollutants or impairments).

ATTACHMENT C

TDA-NPS FY-2014 Proposal

- Example and Instructions -

NAME OF PROJECT:
Title should be enough to identify/describe the project, but shorter is better

LEAD ORGANIZATION:
List the name of organization that will be signing the contract. **Also**, identify the person from this organization who will be managing the project **and provide ample contact information** (e-mail, phone, address, fax).

FEDERAL EMPLOYER IDENTIFICATION NUMBER (FEIN): | |

COOPERATING ORGANIZATIONS:
List the affiliated organizations and clearly describe how each will contribute. Cooperating organizations need to be contacted before submittal of the work plan and agree to partner on this project with significant money, time or material. All proposals submitted shall clearly indicate whether a subcontractor will provide any of the goods or services needed under the proposal. See Attachment D for further information on procurement.

PROJECT LEADER(S) EXPERIENCE:
Provide brief background information concerning the pertinent experience and qualifications of the project leaders.

PROJECT OBJECTIVE:
Include a brief statement that tells specifically what the project will seek to accomplish. *Example: This project will seek to identify and remediate nonpoint source impairments in the Tennessee Creek Watershed, in order to restore it to the condition of fully supporting its designated uses.*

PROJECT LOCATION:
The following information is required:

1. List the name of the watershed where the project is located.
2. List the names of impaired waterbodies from the 303(d) List that are part of the project area.
3. Provide the waterbody segment numbers, from the 303(d) List.
4. If the project is planned at one specific location, provide the latitude and longitude coordinates for the project location.

PROJECT BACKGROUND:
Provide a short history of the project, including such things as previous studies, work performed by other organizations, or past citizen involvement. Include a brief discussion of important characteristics of the project area, such as soil types, number of acres in the project area, known problem areas, benefits to endangered species, likelihood for continued interest after the contract is completed, etc.

PROJECT IMPLEMENTATION:
Provide a general start-to-finish description of how the project will be conducted. This should serve as the basis for establishing the timeline and tasks for the project.

PROJECT TASKS:
Tasks are basically the major components of the project, such as BMPs, publications, videos, maps, stakeholder meetings, field days, training events, etc. A timeline or schedule for accomplishing tasks is required for all projects.

Example of a Schedule with Typical Tasks:

- Within one month of the contract start date, 2 public meetings will be held.
- Within six months of the contract start date, 15 BMPs will be installed.
- 12 facilitated public meetings will be conducted by the contract expiration date.

Standard Tasks:
The following tasks must be included in every project:

- Submit Progress and Close-Out Reports as specified in the contract.

- An Annual Report must be submitted for the period October 1 of the past calendar year through September 30 of the present calendar year. This is referred to as the "2x4 Report" (two paragraphs and 4 pictures).
  - due by September 15th each year
  - narrative of significant accomplishments since the previous October 1st
  - should include pictures of activities

DURATION OF PROJECT, AS PROPOSED (years) _____ (Maximum of **3** years)

PROJECT BUDGET TABLES:

A budget must be completed before the proposal can be considered by TDA-NPS. See the budget template on page 12. Budget instructions follow the budget template. Once the budget is complete, please fill in the boxes below with these key, summary numbers.

TDA-NPS 319: **%** **MATCH:** **%**

Total 319(h) money for Personnel costs of Grantee and Subcontractors [defined as total amount of money allocated for salaries and benefits of employees of the grantee **and** the total amount allocated for payment through subcontracts for technical assistance(i.e., not to include cost of labor for BMP implementation)]:

$

SOURCES AND TYPES OF MATCH:

Line-item Category:	Source:	Type:	Amount ($)
Line-item the match is supporting	*Identify organization providing the match*	*Cash or in-kind?*	*Amount/value of match*

Reminders:

- Proposals that limit the amount of 319 grant funds allocated to **both** salaries and benefits of employees of the grantee **and** all subcontracted personnel charges for technical assistance/design/consulting to a maximum of **25%** of total 319 funds requested will be much more competitive when evaluated for funding.
- If the proposed budget requests grant funds for indirect costs, then the Grantee must submit to the State a copy of the indirect cost rate established by an independent audit or approved by the cognizant federal or state agency. The maximum allowable indirect cost rate, funded by 319(h), is **20%** of the direct cost line items.
- Items that may be considered "direct costs" are limited to the following budget line items: Salaries, Benefits, and Taxes of employees of the grantee; Supplies, etc. (e.g., cost of BMP materials and any other supplies or equipment that are purchased by the grantee solely as a result of this project); Travel, Conferences, and Meetings that is/are incurred solely in order to accomplish this project; and Capital Purchases of goods required by this particular project.
- Be aware that purchases of goods and acquisition of services using 319(h) program funds must follow State of Tennessee procurement policies as outlined in Attachment D.
- Please note that being paid from two different sources for the same hours worked is not allowed (i.e., "double-dipping"). For any individual receiving monetary compensation (e.g., regular salary) from the grantee and who is also seeking grant funds to cover salary, written documentation from the grantee stating the grantee's knowledge and approval of the employment situation and

declaring no conflict of interest or double-dipping is occurring must be included with the proposal submitted to TDA. It is permissible for grant funds to pay for salary, but it must be clear that the grant funds are only for additional hours worked (on the project), beyond those the employee is normally paid for.

GRANT BUDGET TEMPLATE:

GRANT BUDGET				
Grantee:				
The grant budget line-item amounts below shall be applicable only to expense incurred during the following Applicable Period: **BEGIN:** DATE **END:** DATE				
POLICY 03 Object Line-item Reference	**EXPENSE OBJECT LINE-ITEM CATEGORY** [1]	**319 Grant Funds Requested**	**GRANTEE PARTICIPATION (i.e., "Match")**	**TOTAL PROJECT**

1. 2	Salaries, Benefits & Taxes[2] – of grantee employees	0.00	0.00	0.00
4, 15	Professional Fee, Grant & Award [2] – for subcontracted work and BMP materials purchased by others	0.00	0.00	0.00
5, 6, 7, 8, 9, 10	Supplies (including BMP materials purchased by the grantee), Telephone, Postage & Shipping, Occupancy, Equipment Rental & Maintenance, Printing & Publications [2]	0.00	0.00	0.00
11. 12	Travel, Conferences & Meetings	0.00	0.00	0.00
13	Interest [2]	0.00	0.00	0.00
14	Insurance	0.00	0.00	0.00
16	Specific Assistance To Individuals	0.00	0.00	0.00
17	Depreciation	0.00	0.00	0.00
18	Other Non-Personnel	0.00	0.00	0.00
20	Capital Purchase [2]	0.00	0.00	0.00
22	Indirect Cost (20% 319 max.)	0.00	0.00	0.00
24	In-Kind Expense	0.00	0.00	0.00
25	**GRAND TOTAL**	**0.00**	**0.00**	**0.00**

[1] Each expense object line-item shall be defined by the Department of Finance and Administration Policy 03, *Uniform Reporting Requirements and Cost Allocation Plans for Subrecipients of Federal and State Grant Monies, Appendix A*. (posted on the Internet at: www.state.tn.us/finance/act/documents/policy3.pdf).

[2] Applicable detail must follow this page if line-item is funded.

NOTE: shaded line-items will not be funded by the Tennessee NPS Program

GRANT BUDGET LINE-ITEM DETAIL TABLES:

Please only include 319 grant funds in Line-Item Detail tables.

***NOTE – see pages 15-17 for details of what costs need to be described under which line-items.**

SALARIES AND BENEFITS & TAXES	AMOUNT
SPECIFIC, DESCRIPTIVE, DETAIL	0.00
REPEAT LINE AS NECESSARY	0.00
TOTAL	0.00

PROFESSIONAL FEE/ GRANT & AWARD	AMOUNT
SPECIFIC, DESCRIPTIVE, DETAIL	0.00
REPEAT LINE AS NECESSARY	0.00
TOTAL	0.00

SUPPLIES, TELEPHONE, POSTAGE & SHIPPING, OCCUPANCY, EQUIPMENT RENTAL & MAINTENANCE, PRINTING & PUBLICATIONS	AMOUNT
SPECIFIC, DESCRIPTIVE, DETAIL	0.00
REPEAT LINE AS NECESSARY	0.00
TOTAL	0.00

INTEREST	AMOUNT
SPECIFIC, DESCRIPTIVE, DETAIL	0.00
REPEAT LINE AS NECESSARY	0.00
TOTAL	0.00

CAPITAL PURCHASE	AMOUNT
SPECIFIC, DESCRIPTIVE, DETAIL	0.00
REPEAT LINE AS NECESSARY	0.00
TOTAL	0.00

GRANT BUDGET TEMPLATE INSTRUCTIONS

Grant Budgets must be mathematically correct and typewritten. Care must be taken when "rounding" any amounts such that the sum of amounts in each column is exactly, and mathematically accurate.

All line-items are required in accordance with the following instructions. In line-items that WILL be funded, replace the zeros ("0.00") associated with each line-item as appropriate. If a line-item will NOT be funded, leave the associated, "0.00" dollar amount.

Expense Object Line-Item Category Definitions (from F&A Policy 03)

- *Salaries*— expenditures for compensation, fees, salaries, and wages paid to officers, directors, trustees, and employees of the grantee. Please note that being paid from two different sources for the same hours worked is not allowed (i.e., "double-dipping"). For any individual receiving monetary compensation (e.g., regular salary) from the grantee and who is also seeking grant funds to cover salary, written documentation from the grantee stating the grantee's knowledge and approval of the employment situation and declaring no conflict of interest or double-dipping is occurring must be included with the proposal submitted to TDA. It is permissible for grant funds to pay for salary, but it must be clear that the grant funds are only for additional hours worked (on the project), beyond those the employee is normally paid for.

- *Benefits & Taxes*— (a) expenditures for contributions to pension plans and to employee benefit programs such as health, life, and disability insurance; and (b) expenditures for payroll taxes such as social security and Medicare taxes and unemployment and workers' compensation insurance. This only applies to benefits of employees of the grantee.
- *Professional Fee/ Grant & Award*— (a) expenditures for fees to outside professionals, consultants, and personal-service contractors including legal, accounting, and auditing fees; (b) expenditures for awards, grants, subsidies, and other pass-through expenditures to individuals and to other organizations, allocations to affiliated organizations, in-kind grants to individuals and organizations, and scholarships, tuition payments, travel allowances, and equipment allowances to clients and individual beneficiaries; and (c) expenditures for service unit/milestone rate payments (in which the payment rates are equal to the amount that the State has determined to be the reasonable and necessary cost for the associated unit or milestone) NOTE: If the grant provides funding for service unit/milestone rate payments, specify each service unit/milestone in the associated detail schedule (clearly explain the unit/milestone of service and the associated rate). Essentially, this section is for two items: **(1)** personnel costs that are procured and subcontracted out such as technical assistance, engineering/design work, or consulting; and **(2)** reimbursements to individual landowners for cost-share on their costs of BMP materials and labor to install them. These two items should be detailed separately in the "line-item detail" breakdown. Supplies purchased by the grantee for BMP implementation should be placed in the "Supplies line-item.
- *Supplies*—expenditures for office supplies, housekeeping supplies, food and beverages, other supplies, and the cost of BMP materials actually purchased by the grantee
- *Telephone*— expenditures for telephone, cellular phones, beepers, telegram, FAX, E-mail, and telephone equipment maintenance
- *Postage & Shipping*— expenditures for postage, messenger services, overnight delivery, outside mailing service fees, freight and trucking, and maintenance of delivery and shipping vehicles
- *Occupancy*— expenditures for office space and other facilities, heat, light, power, other utilities, outside janitorial services, mortgage interest, and real estate taxes
- *Equipment Rental & Maintenance*— expenditures for renting and maintaining computers, copiers, postage meters, other office equipment, and other equipment, except telephone, truck, and automobile expenses

- *Printing & Publications*— expenditures for producing printed materials, purchasing books and publications, and buying subscriptions to publications
- *Travel/ Conferences & Meetings*— (a) expenditures for transportation, meals and lodging, and per diem payments including travel expenses for meetings and conferences, gas and oil, repairs, licenses and permits, and leasing costs for vehicles, and (b) expenditures for conducting or attending meetings, conferences, and conventions including rental of facilities, speakers' fees and expenses, printed materials, and registration fees
- *Interest*— interest expenditures for loans and capital leases on equipment, trucks and automobiles, and other notes and loans, except mortgage interest
- *Insurance*— expenditures for liability, property, and vehicle insurance, fidelity bonds, and other insurance, except employee benefit-related insurance
- *Capital Purchase*— expenditures for land, equipment, buildings, leasehold improvements, and other fixed assets
- *Indirect Cost* (a.k.a., Administrative Expense) — proportional amount in accordance with an allocation plan approved by the cognizant state agency (NOTE: Pass-through funds are not included when computing this the proportional amount). The maximum allowable indirect cost rate, funded by 319(h), is **20%** of the direct cost items. Items that may be considered "direct costs" are limited to the following budget line items: Salaries, Benefits, and Taxes of employees of the grantee; Supplies, etc. (e.g., cost of BMP materials and any other supplies or equipment that are purchased by the grantee solely as a result of this project); Travel, Conferences, and Meetings that is/are incurred solely in order to accomplish this project; and Capital Purchases of goods required by this particular project.

The "319 Grant Funds Requested" column total MUST equal the maximum liability of the grant.

Grant Budget Line-Item Detail. Complete the line-item detail box for each of the following five line-items for which detail is required IF the line-item is funded.

- Salaries and Benefits & Taxes
- Professional Fee/ Grant & Award
- Supplies, Telephone, Postage & Shipping, Occupancy, Equipment Rental & Maintenance, Printing & Publications
- Interest
- Capital Purchase

Please only include 319 grant funds in Line-Item Detail tables.

Delete the line-item detail box for any of the line-items that are NOT funded.

DO NOT draft the Grant Budget Line-Item Detail to describe a line-item only as "contracts," "contracted services," "other," "professional services," or "miscellaneous." Greater specificity is required.

ATTACHMENT D

Procurement Policy for Grant Contracts

The purpose of this policy is to ensure that "maximum value for services rendered or goods purchased" is achieved for all public funds spent through our grant programs. This will require open and competitive bidding in accordance with State of Tennessee-Department of General Services and Department of Finance and Administration regulations and policies.

State Procurement Policies:

All procurement transactions shall be conducted in a manner to provide, to the maximum extent practical, open and free competition. All projects funded shall conform to State of Tennessee procurement regulations. If the Grantee seeks reimbursement for the cost of goods, materials, supplies, equipment, and/or contracted services, such

procurement shall be made on a competitive basis, including the use of competitive bidding procedures, where practical. The Grantee shall maintain documentation for the basis of each procurement for which reimbursement is paid pursuant to a grant contract. Procurement records and files for purchases in excess of the small purchase threshold shall include the following at a minimum: Basis for contractor selection; justification for lack of competition when competitive bids or offers are not obtained; and basis for award cost or price.

Purchases of goods or services less than $5,000 do not require procurement documentation. Purchases of goods or services more than $5,000 but less than $25,000 require a minimum of three quotes (can be from a variety of sources: written, telephone, internet, e-mail, etc.). Purchases of goods or services for more than $25,000 will require a formal sealed-bid procedure, consistent with state policy. Splitting invoices is prohibited. Where bids are solicited, a minimum of 3 bids must be sought. However, there is no minimum number of bids that must be received.

All subcontracts must be made in compliance with the following Procurement Procedures:

1) All recipients shall establish written procurement procedures. These procedures shall provide for, at a minimum, that paragraphs 1) (a.), (b.), and (c.) of this section apply.

a. Recipients avoid purchasing unnecessary items.

b. Where appropriate, an analysis is made of lease and purchase alternatives to determine which would be the most economical and practical procurement.

c. Solicitations for goods and services provide for all of the following:

i. A clear and accurate description of the technical requirements for the material, product or service to be procured. In competitive procurements, such a description shall not contain features which unduly restrict competition.

ii. Requirements which the bidder/offeror must fulfill and all other factors to be used in evaluating bids or proposals.

iii. A description, whenever practicable, of technical requirements in terms of functions to be performed or performance required, including the range of acceptable characteristics or minimum acceptable standards.

iv. The specific features of “brand name or equal” descriptions that bidders are required to meet when such items are included in the solicitation.

v. The acceptance, to the extent practicable and economically feasible, of products and services dimensioned in the metric system of measurement.

vi. Preference, to the extent practicable and economically feasible, for products and services that conserve natural resources and protect the environment and are energy efficient.

2) Positive efforts shall be made by recipients to utilize small businesses, minority-owned firms, and women's business enterprises, whenever possible. Recipients of Federal awards shall take all of the following steps to further this goal.

a. Ensure that small businesses, minority-owned firms, and women's business enterprises are used to the fullest extent practicable.

b. Make information on forthcoming opportunities available and arrange time frames for purchases and contracts to encourage and facilitate participation by small businesses, minority-owned firms, and women's business enterprises.

c. Consider in the contract process whether firms competing for larger contracts intend to subcontract with small businesses, minority-owned firms, and women's business enterprises.

d. Encourage contracting with consortiums of small businesses, minority-owned firms and women's business enterprises when a contract is too large for one of these firms to handle individually.

e. Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Department of Commerce's Minority Business Development Agency in the solicitation and utilization of small businesses, minority-owned firms and women's business enterprises.

3) The type of procuring instruments used (e.g., fixed price contracts, cost reimbursable contracts, purchase orders, and incentive contracts) shall be determined by the recipient but shall be appropriate for the particular procurement and for promoting the best interest of the program or project involved. The “cost-plus-a-percentage-of-cost” or “percentage of construction cost” methods of contracting shall not be used.

4) Contracts shall be made only with responsible contractors who possess the potential ability to perform successfully under the terms and conditions of the proposed procurement. Consideration shall be given to such matters as contractor integrity, record of past performance, financial and technical resources or accessibility to other necessary resources. In certain circumstances, contracts with certain parties are restricted by agencies' implementation of Executive Orders 12549 and 12689, “Debarment and Suspension.”

5) Recipients shall, on request, make available for EPA, pre-award review and procurement documents, such as request for proposals or invitations for bids, independent cost estimates, etc., when any of the following conditions apply.

a. A recipient's procurement procedures or operation fails to comply with the procurement standards in EPA's implementation of Circular A–110.

b. The procurement is expected to exceed the small purchase threshold fixed at 41 U.S.C. 403 (11) (currently $100,000) and is to be awarded without competition or only one bid or offer is received in response to a solicitation.

c. The procurement, which is expected to exceed the small purchase threshold, specifies a “brand name” product.

d. The proposed award over the small purchase threshold is to be awarded to other than the apparent low bidder under a sealed bid procurement.

e. A proposed contract modification changes the scope of a contract or increases the contract amount by more than the amount of the small purchase threshold.

Awards shall be made to the bidder or offeror whose bid or offer is responsive to the solicitation and is most advantageous to the recipient, price, quality and other factors considered. Solicitations shall clearly set forth all requirements that the bidder or offeror shall fulfill in order for the bid or offer to be evaluated by the recipient. Any and all bids or offers may be rejected when it is in the recipient's interest to do so.

In each instance where it is determined that use of a competitive procurement method was not practical, said documentation shall include a written justification, approved by the Commissioner, Department of Agriculture, for such decision and non-competitive procurement. Further, if such reimbursement is to be made with funds derived wholly or partially from federal sources, the determination of cost shall be governed by and reimbursement shall be subject to the Grantee's compliance with applicable federal procurement requirements.

The Grantee shall obtain prior approval from the State before purchasing any equipment (“Capital Purchase”) under this Grant Contract.

The Grantee shall not assign this Grant Contract or enter into a subcontract for any of the services performed under this Grant Contract without obtaining the prior written approval of the State. If such subcontracts are approved by the State, they shall contain, at a minimum, sections of the Grant Contract pertaining to "Conflicts of Interest," “Lobbying,” "Nondiscrimination," “Public Accountability,” “Public Notice,” and “Records” (as identified by the section headings). Notwithstanding any use of approved subcontractors, the Grantee shall be the prime contractor and shall be responsible for all work performed.

How to Address the Issue of Subcontracting in a Proposal:

There is some difference as to the way the proposal should be written depending on when the subcontractor is procured. Please adhere to the following guidance:

Scenario 1: Subcontractors Identified At The Time Of Proposal Submittal:

All proposals submitted shall clearly indicate whether a sub-contractor will provide any of the goods or services needed under the proposal. Documentation shall be included with the proposal demonstrating that the procurement process used to secure this subcontractor complied with procurement policy stated above.

Scenario 2: Subcontractors Retained After Contract Start Date:

The grant recipient must request in writing permission to sub-contract from the department. After obtaining approval, the grant recipient shall proceed to procure the goods or services required through a competitive bidding process that complies with the procurement policy stated above. Documentation of the bidding process does not need to be submitted to TDA, but must be maintained in records by the grantee.

Appendix E

TENNESSEE PRIORITY WATERSHEDS/2012 303(d) LIST				
Waterbody ID	**Impacted WB**	**County**	**Miles Impaired**	**Pollutant Source**
TN06010208 020 – 0100	Smith Branch	Morgan	5.40	Abandoned Mines
TN06010208 020 – 0400	Golliher Creek	Morgan	5.60	Abandoned Mines
TN06010208 020 – 0500	Fagon Mill Creek	Morgan	2.60	Abandoned Mines
TN06010208 020 – 0600	Little Laurel Creek	Morgan	1.32	Abandoned Mines
TN06010208 020 – 0700	Laurel Creek	Morgan	3.70	Abandoned Mines
TN06010208 020 – 3000	Crab Orchard Creek	Morgan	7.90	Abandoned Mines
TN06020003 014 - 0110	Burra Burra Creek	Polk	2.20	Abandoned Mines
TN06020003 014 - 1000	Ocoee River	Polk	2.50	Abandoned Mines
TN06020003 001 - 1000	Ocoee River	Polk	13.00	Abandoned Mines Upstream Impoundment
TN06020003 013 - 1000	Ocoee River - Parksville Res. To Ocoee #2 Dam.	Polk	7.18	Abandoned Mines Upstream Impoundment
TN05130104 037 – 1610	Joe Branch	Anderson	1.13	Abandoned Mining
TN05130104 037 – 1611	Unnamed Trib To Joe Branch	Anderson	0.44	Abandoned Mining
TN05130104 050 - 0100	East Branch Bear Creek	Scott	5.70	Abandoned Mining
TN05130104 050 - 1000	Bear Creek	Scott	1.35	Abandoned Mining
TN05130105 015 – 0300	Cub Creek	Overton	7.20	Abandoned Mining
TN05130105 019 – 0900	Meadow Creek	Putnam Cumberland	19.00	Abandoned Mining
TN05130105 019 – 1300	Big Laurel Creek	Fentress Overton	9.20	Abandoned Mining
TN05130105 019 – 1310	Little Laurel Creek	Fentress Overton	3.60	Abandoned Mining
TN05130105 019 – 1400	Big Piney Creek	Fentress Overton	18.60	Abandoned Mining
TN05130105 019 – 2000	East Fork Obey River	Fentress Overton	22.60	Abandoned Mining
TN05130105 019 – 3000	East Fork Obey River	Putnam Overton	11.10	Abandoned Mining
TN05130107 016 – 2000	Collins River	Grundy	5.8	Abandoned Mining
TN05130107 023 – 0200	Dry Creek	Warren Sequatchie	31.25	Abandoned Mining
TN05130108 024 – 4000	Rocky River	Van Buren Warren	17.00	Abandoned Mining
TN05130108 027 – 0300	Gardner Creek	Bledsoe	3.10	Abandoned mining
TN05130108 027 – 0750	Piney Creek	Van Buren	12.28	Abandoned Mining
TN05130108 027 – 0850	Dry Fork	Van Buren	16.70	Abandoned Mining
TN05130108 036 – 0100	Clifty Creek	White	21.40	Abandoned Mining
TN05130108 036 – 1100	Puncheoncamp Creek	Cumberland	12.80	Abandoned Mining
TN06010205 064 - 0110	Thompson Creek	Campbell	5.14	Abandoned Mining
TN06010208 004 – 0400	Summers Branch	Morgan	5.00	Abandoned Mining
TN06020001 067 – 0600	Standifer Creek	Sequatchie	3.90	Abandoned Mining
TN06020001 067 – 1100	Hogskin Branch	Hamilton	0.77	Abandoned Mining

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06020001 067 – 2000	North Chickamauga Creek	Hamilton	4.08	Abandoned Mining
TN06020001 109 – 0200	Fruedenberg Creek	Hamilton	1.40	Abandoned Mining
TN06020001 421 – 0100	South Suck Creek	Marion	9.20	Abandoned Mining
TN06020003 014 - 0140	Ellis Branch	Polk	2.80	Abandoned Mining
TN05130107 023 – 0231	Little He Creek	Sequatchie	1.98	Abandoned Mining
TN05130107 023 – 0232	Big He Creek	Sequatchie	2.95	Abandoned Mining
TN05130101 046 – 0200	Bennett Fork	Claiborne	11.00	Abandoned Mining
TN06020001 062 – 1000	Possum Creek	Hamilton Bledsoe	13.19	Abandoned Mining Channelization
TN06010208 004 – 2000	Crooked Fork	Morgan	16.70	Abandoned Mining Channelization
TN06020003 014 - 0100	North Potato Creek	Polk	6.30	Abandoned Mining Mine Tailings Channelization
TN05130101 091 – 1000	Elk Creek	Campbell	6.44	Abandoned Mining Septic Tanks
TN05130101 016 – 0100	White Oak Creek	Campbell	6.70	Abandoned Mining Septic Tanks
TN05130104 037 – 1800	Smoky Creek	Scott	34.07	Abandoned Mining Silviculture
TN06020002 083 – 0100	Black Branch	McMinn	1.98	Animal Feeding Operation
TN06030003 063 – 2000	Swan Creek	Lincoln Marshall	9.90	Animal Feeding Operation (NPS)
TN06010206 026 – 5000	Davis Creek	Claiborne	1.50	Animal Feeding Operations
TN06010208 013 – 0400	Drowning Creek	Cumberland	13.10	Animal Feeding Operations (Nonpoint)
TN06020001 041 – 0320	Bivens Branch	McMinn	2.20	Animal Feeding Operations (Nonpoint)
TN06010102 012 – 0700	Dry Creek	Sullivan	1.01	Animal Feeding Operations (NPS)
TN06010104 019 - 0100	Little Flat Creek	Knox	30.3	Animal Feeding Operations (NPS)
TN08010207 035 - 0600	Rose Creek	McNairy	10.9	Animal Feeding Operations (NPS)
TN08010205 012 - 1200	Cub Creek	Madison	2.07	Animal Feeding Operations (NPS)Pasture Grazing Channelization
TN06010206 026 – 3000	Davis Creek	Claiborne	3.60	Animal Feeding Operations Pasture Grazing
TN06010206 026 – 4000	Davis Creek	Claiborne	2.60	Animal Feeding Operations Pasture Grazing
TN06010108 029 – 0900	Tate Springs	Unicoi	2.33	Aquaculture

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06020002 081 – 1000	Conasauga Creek	McMinn Monroe	33.99	Area Pasture Grazing
TN08010209 002 - 1000	Loosahatchie River	Shelby	10.3	Atmospheric Deposition Channelization
TN08010209 001 - 1000	Loosahatchie River	Shelby	7.8	Atmospheric Deposition Channelization
TN08010210 002 – 1000	Wolf River	Shelby	6.3	Atmospheric Deposition Channelization
TN06040004 001 – 1000	Buffalo River	Humphreys Perry	38.30	Atmospheric Deposition Undetermined Source
TN06010207 020 – 1300	Mitchell Branch	Anderson	2.09	Channelization
TN06010201 040 –0600	Black Creek	Roane	16.70	Channelization
TN08010211 00711– 0500	Hurricane Creek	Shelby	13.3	Channelization
TN08010209 021 – 1000	Big Creek	Shelby	8.33	Channelization
TN06020001 007 – 0200	Unnamed Trib To South Chickamauga Creek	Hamilton	1.10	Channelization
TN08010210 032 - 2000	Cypress Creek	Shelby	5	Channelization
TN05130108 045 – 0450	Pigeon Roost Creek	Putnam	3.20	Channelization
TN05130203 023 –0210	Unnamed Trib To Bushman Creek	Rutherford	0.37	Channelization
TN05130203 036 – 0100	East Branch Hurricane Creek	Rutherford	7.30	Channelization
TN06010102 001 – 0100	Madd Branch	Sullivan	2.70	Channelization
TN06010201 983 – 1000	Polecat Creek	Blount	1.85	Channelization
TN06020001 049 – 1000	Little Richland Creek	Rhea	20.40	Channelization
TN06020001 067 – 0210	Ninemile Branch	Hamilton	4.00	Channelization
TN06040002 012 - 0700	Snell Branch	Marshall	4.50	Channelization
TN06040003 027 – 0100	Unnamed Trib To Little Bigby Cr.	Maury	2.00	Channelization
TN06040003 030 - 0100	Unnamed Trib To Lytle Creek	Maury	1.60	Channelization
TN06040005 870 - 0210	Cane Creek	Benton	2.84	Channelization
TN08010203 032 – 1500	Wolf Creek	Gibson	21.60	Channelization
TN08010203 032 – 1510	East Fork Wolf Creek	Gibson Carroll	8.20	Channelization
TN08010204 010 - 0500	Poplar Creek	Madison	9.70	Channelization
TN08010211 00711– 0200	Cane Creek	Shelby	7.2	Channelization
TN08010211 00711– 0300	Black Bayou	Shelby	7.9	Channelization
TN08010211 00711– 0600	Days Creek	Shelby	10.6	Channelization
TN08010211 00711– 2000	Nonconnah Creek	Shelby	4.86	Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010211 00711– 3000	Nonconnah Creek	Shelby	4.1	Channelization
TN08010211 00720– 1000	Nonconnah Creek	Shelby	8.3	Channelization
TN08010211 176 – 1000	John'S Creek	Shelby	13.7	Channelization
TN08010211 00711– 1000	Nonconnah Creek	Shelby	3.2	Channelization
TN06020002 009 – 2000	South Mouse Creek	Bradley	6.50	Channelization
TN06030003 032 – 1000	Wagner Creek	Franklin	18.80	Channelization
TN08010204 010 – 0800	Moize Creek	Madison	12.80	Channelization
TN08010205 012 – 0400	Sandy Creek	Madison	4.3	Channelization
TN08010205 012 – 0500	Central Creek	Madison	2	Channelization
TN08010209 001 - 0100	Todd Branch	Shelby	4.9	Channelization
TN08010209 021 – 2000	Big Creek	Shelby	6.25	Channelization
TN08010210 023 – 0100	Unnamed Trib To Fletcher Creek	Shelby	23.1	Channelization
TN05130108 045 – 0400	Pigeon Roost Creek	Putnam	2.40	Channelization
TN06010107 010 - 1800	Mill Creek	Sevier	5.90	Channelization
TN08010204 010 - 0700	Dyer Creek	Madison	30.60	Channelization
TN08010211 00720– 2000	Nonconnah Creek	Shelby	6.2	Channelization
TN08010209 002 - 2000	Loosahatchie River	Shelby	8.2	Channelization
TN08010210 032 - 1000	Cypress Creek	Shelby	8.6	Channelization
TN05110002 008 – 0600	Donaho Branch	Sumner	3.00	Channelization
TN06010104 001 - 1400	Swanpond Creek	Knox	16.3	Channelization
TN06020001 057 – 0200	Roaring Creek	Rhea	5.30	Channelization
TN06030003 044 – 0600	Dry Creek	Grundy	13.80	Channelization
TN06040001 802 – 0300	Flat Creek	Decatur Henderson	22.77	Channelization
TN06040005 032 – 0700	Big Beaver Creek	Henderson	13.13	Channelization
TN08010100 001 - 0100	Harris Ditch	Lake	7.58	Channelization
TN08010202 048 - 0100	Zion Creek	Obion	11.80	Channelization
TN08010203 001 – 1600	Unnamed Trib To South Fork Obion River	Gibson	8.80	Channelization
TN08010203 016 – 0200	Cotton Creek	Weakley	12.30	Channelization
TN08010203 016 – 0400	Boaz Creek	Weakley Henry	5.80	Channelization
TN08010204 003 - 0100	Cain Creek	Dyer	2.62	Channelization
TN08010204 003 - 0200	Little Pond Creek	Crockett	9.30	Channelization
TN08010204 004 - 0300	Squirt Creek	Gibson	5.94	Channelization
TN08010204 004 - 0400	Eliza Creek	Dyer	7.02	Channelization
TN08010204 004 - 0500	Nash Creek	Dyer	11.06	Channelization
TN08010204 009 - 0200	Unnamed Trib To Cypress Creek	Crockett	3.19	Channelization
TN08010204 013 – 1000	Gilme'S Creek	Madison	15.30	Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010204 020 - 2000	North Fork Forked Deer River	Gibson	8.20	Channelization
TN08010204 021 - 0100	Dry Creek	Gibson	5.73	Channelization
TN08010204 021 - 0200	Cow Creek	Gibson	11.80	Channelization
TN08010204 021 - 1000	Mud Creek	Gibson	33.56	Channelization
TN08010204 022 - 0200	Unnamed Trib To Doakville Creek	Dyer	2.68	Channelization
TN08010205 005 –0210	Briar Creek	Haywood	7.61	Channelization
TN08010205005-0300	Pond Creek	Haywood Lauderdale	45.2	Channelization
TN08010205 005 –0310	Otter Creek	Lauderdale Haywood	15.31	Channelization
TN08010205 005 –0400	Lost Creek	Haywood Lauderdale	14.6	Channelization
TN08010205 011 – 1000	Mud Creek	Haywood	42.9	Channelization
TN08010205 031 - 0100	Lick Creek	Crockett	6.6	Channelization
TN08010205 031 - 0200	Bear Creek	Crockett	6.4	Channelization
TN08010206 001 - 1000	Forked Deer River	Dyer Lauderdale	14.9	Channelization
TN08010208 001 -0600	Dry Branch	Hardeman Madison	4.6	Channelization
TN08010208 001 –1550	Short Creek	Hardeman	10.25	Channelization
TN08010208 009 -0100	London Creek	Haywood	6.9	Channelization
TN08010208 034 - 0200	Nelson Creek	Lauderdale	10.6	Channelization
TN08010208 034 - 3000	Cane Creek	Lauderdale	4.6	Channelization
TN08010209 004 – 1000	Loosahatchie River	Shelby Fayette	10	Channelization
TN08010209 011 – 1000	Loosahatchie River	Fayette	5.8	Channelization
TN08010209 011 – 2000	Loosahatchie River	Fayette	14.1	Channelization
TN08010209 016 – 0310	Baxter Bottom	Tipton	37.99	Channelization
TN08010210 002 – 0100	Sweetbriar Creek	Shelby	2.5	Channelization
TN08010210 002 – 2000	Wolf River	Shelby	3.8	Channelization
TN06030004 017 – 0700	Unnamed Trib To Richland Creek	Giles	1.28	Channelization
TN06010207 004 – 0100	Grable Branch	Knox	1.30	Channelization
TN08010210 001 – 1000	Wolf River	Shelby	12.8	Channelization
TN05130203 539 – 1000	East Fork Hamilton Creek	Davidson	6.00	Channelization
TN05130204 002 –0700	Spicer Branch	Dickson	4.60	Channelization
TN08010205 005 –0100	Little Nixon Creek	Haywood	15.30	Channelization
TN06010102 006T – 0100	Gammon Creek	Sullivan	3.8	Channelization Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010204 004 - 1000	North Fork Forked Deer River	Dyer	9.34	Channelization Atmospheric Deposition
TN08010202 028 - 0100	Unnamed Trib To Clover Creek	Obion	3.74	Channelization Nonirrigated Crop Production
TN08010204 015 – 1000	Turkey Creek	Madison Gibson	24.30	Channelization Nonirrigated Crop Production
TN06010207 020 – 0400	Indian Creek	Roane	6.80	Channelization Pasture Grazing
TN08010204 023 – 0210	Light Creek	Dyer	30.91	Channelization Pasture Grazing
TN06010201 015 - 2000	Sweetwater Creek	Loudon Monroe	10.13	Channelization Pasture Grazing Animal Feeding Operation (NPS)
TN06010102 042 – 2000	Beaver Creek	Sullivan	10.5	Channelization Pasture Grazing Sources Outside State Borders
TN06020001 007 – 1000	South Chickamauga Creek	Hamilton	17.60	Channelization Sources Outside of State
TN06010102 042 – 0400	Little Creek	Sullivan	0.3	Channelization Sources Outside State Borders
TN08010204 023 – 0200	Jones Creek	Dyer	21.05	Channelization Undetermined Pathogen Source
TN08010205 010 –0100	Kail Creek	Crockett Haywood	27.4	Channelization Undetermined Pathogen Source
TN08010209 007 – 1000	Loosahatchie River	Fayette	9.6	Channelization Undetermined Source
TN05130107 023 – 0230	He Creek	Sequatchie	1.45	Coal Mining Permitted Discharge Abandoned Mining
TN06020002 008 - 0100	Bacon Branch	Bradley	3.36	Concentrated Animal Feeding Operation (CAFO)Animal Feeding Operations
TN03150101 021 - 0100	Mills Creek	Bradley	5.39	Concentrated Animal Feeding Operation (CAFO)Pasture Grazing
TN06040003 041 – 0900	Lunns Branch	Hickman Maury	3.30	Concentrated Animal Feeding Operation (permitted point)
TN06040003 041 – 0800	Potts Branch	Maury	2.90	Confined Animal Feeding Operation (nonpoint)

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06020001 029 – 0400	Lewis Branch	Hamilton	1.50	Confined Animal Feeding Operations (Nonpoint) Pasture Grazing
TN06040004 013 - 0300	Dry Branch	Lawrence	2.34	Dairies
TN06040002 032 - 0310	Muddy Branch	Coffee	5.10	Dairies Pasture Grazing
TN06040002 032 - 0300	Clear Branch	Coffee	7.30	Dairies Pasture Grazing
TN08010203 001 – 0910	Spring Creek	Carroll	7.63	Failing Collection System Channelization
TN05130204 002 –0600	Unnamed Trib. To Jones Creek	Dickson	0.26	Golf Course Upstream Impoundment
TN06020003 013.55–1000	Ocoee River-From Res. #2 To Dam#3.	Polk	3.90	Impacts from Abandoned Mines Upstream Impoundment
TN06010106 001 – 2000	Pigeon River-	Cocke	16.00	Irrigated Crop Production
TN06010108 001 - 1000	Nolichucky River	Hamblen Cocke	4.00	Irrigated Crop Production
TN06040001 054 – 1000	Snake Creek	McNairy Hardin	9.30	Irrigated Crop Production Unknown Source
TN08010202 500 - 1000	Cypress Creek	Obion Weakley	12.10	Land Application of Wastes Nonirrigated Crop Production Channelization
TN05130203 539 – 0100	West Fork Hamilton Creek	Davidson	1.80	Loss of Riparian Habitat
TN05130202 007 – 1490	Cathy Jo Branch	Davidson	1.10	Manure Runoff Upstream Impoundments Animal Feeding Areas
TN06010205 014 - 0500	Flat Gap Creek	Hancock Hawkins	1.00	Mine Tailings
TN06040001 043 - 0700	Hurricane Creek	Hardin Henderson	30.70	Nonirrigated Channelization
TN05130206 039 - 0100	Spring Creek	Montgomery	8.90	Nonirrigated Crop Production
TN05130201 001T-0900	Wilburn Creek	Smith	9.90	Nonirrigated Crop Production
TN05130206 002 - 3000	Red River	Montgomery Robertson	17.50	Nonirrigated Crop Production
TN05130206 002 - 4000	Red River	Robertson	4.50	Nonirrigated Crop Production
TN05130206 039 - 0110	Unnamed Trib To Spring Creek	Montgomery	5.38	Nonirrigated Crop Production
TN06010205 013 - 1200	Davis Branch	Hancock	2.22	Nonirrigated Crop Production
TN06030002 1124 - 1000	Hester Creek	Lincoln	14.80	Nonirrigated Crop Production

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06030002 1149 - 0100	Cottrell Spring Branch	Lincoln	8.70	Nonirrigated Crop Production
TN06030002 1149 - 0300	Trotters Branch	Lincoln	16.40	Nonirrigated Crop Production
TN06030002 1149 - 0600	Big Huckleberry Creek	Lincoln	12.20	Nonirrigated Crop Production
TN06030002 1149 - 1000	Flint River	Lincoln	22.00	Nonirrigated Crop Production
TN06030003 026 – 1000	Dry Creek	Franklin	21.10	Nonirrigated Crop Production
TN06030003 044 – 0200	Patton Creek	Grundy	4.20	Nonirrigated Crop Production
TN06030003 085 – 1000	Childer Creek	Franklin	8.90	Nonirrigated Crop Production
TN06040001 149 – 1000	Mud Creek	Hardin	37.90	Nonirrigated Crop Production
TN06040005 027 –1310	Hollow Rock Branch	Carroll	11.71	Nonirrigated Crop Production
TN06040005 032 –0600	Olive Branch	Henderson	9.2	Nonirrigated Crop Production
TN06040006 014 - 0100	White Oak Creek	Henry	1.09	Nonirrigated Crop Production
TN06040006 014 – 0200	Dry Creek	Henry	4.99	Nonirrigated Crop Production
TN06040006 014 – 0300	Pleasant Grove Creek	Henry	1.63	Nonirrigated Crop Production
TN06040006 014 – 1000	East Fork Clarks River	Henry	5.9	Nonirrigated Crop Production
TN08010202 009 - 0200	Tommy Creek	Weakley	7.4	Nonirrigated Crop Production
TN08010202 009 - 1100	Dry Creek	Henry	6.30	Nonirrigated Crop Production
TN08010202 009 - 1900	Mayo Branch	Weakley	7.40	Nonirrigated Crop Production
TN08010203 007 - 2000	Reedy Creek	Carroll	10.99	Nonirrigated Crop Production
TN08010203 015 - 0100	Terrell Branch	Weakley	4.60	Nonirrigated Crop Production
TN08010203 015 - 1400	Summers Creek	Weakley	3.70	Nonirrigated Crop Production
TN08010203 015 - 1500	Morris Branch	Weakley	4.20	Nonirrigated Crop Production
TN08010203 015 - 1800	Buckor Ditch	Weakley	6.20	Nonirrigated Crop Production
TN08010203 032 – 2300	Edmundson Creek	Gibson	14.70	Nonirrigated Crop Production
TN08010204 010 - 0200	Duffy'S Branch	Gibson Madison	6.40	Nonirrigated Crop Production
TN08010204 010 - 0300	Dry Branch	Gibson Madison	9.70	Nonirrigated Crop Production
TN08010205 036 - 0100	Tisdale Creek	Lauderdale	12.14	Nonirrigated Crop Production

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010207 031 - 1640	Unnamed Trib To Muddy Creek	McNairy	3.2	Nonirrigated Crop Production
TN08010208 001 –1700	Gamble Branch	Hardeman	6	Nonirrigated Crop Production
TN08010208 007 -0200	Smart Creek	Fayette	11.9	Nonirrigated Crop Production
TN08010208 009 -0200	Morris Branch	Haywood	2.44	Nonirrigated Crop Production
TN08010208 009 - 0410	Prairie Creek	Haywood	4.7	Nonirrigated Crop Production
TN08010208 030 - 0100	Turkey Branch	Madison	5.6	Nonirrigated Crop Production
TN08010208 032 - 1000	Cypress Creek	Haywood	19.2	Nonirrigated Crop Production
TN08010208 072 - 1000	Richland Creek	Haywood Hardeman	11	Nonirrigated Crop Production
TN08010209 016 – 0300	East Beaver Creek	Tipton Fayette	84.5	Nonirrigated Crop Production
TN08010204 010 - 2000	Middle Fork Forked Deer River	Madison Crockett	8.50	Nonirrigated Crop Production
TN06030002 1216 - 0200	Walker Creek	Lincoln	12.67	Nonirrigated Crop Production
TN05130206 002 - 1000	Red River	Montgomery	2.40	Nonirrigated Crop Production
TN08010202 025 - 1000	Harris Fork Creek	Obion	9.60	Nonirrigated Crop Production Channelization
TN08010204 001 - 1000	North Fork Forked Deer River	Gibson Dyer	8.34	Nonirrigated Crop Production Channelization
TN08010204 023 - 1000	Lewis Creek	Dyer	46.30	Nonirrigated Crop Production Channelization
TN08010208 031 - 1000	Sugar Creek	Haywood	10.5	Nonirrigated Crop Production Highway/Bridge Construction
TN05130205 038 - 2000	Big Mcadoo Creek	Montgomery	5.80	Nonirrigated Crop Production Undetermined Source
TN08010209 004 – 0100	Black Ankle Creek	Fayette	27	Nonirrigated Crop Production Undetermined Source
TN08010208 034 - 0300	Hyde Creek	Lauderdale	20.54	Nonirrigated Crop Production Channelization
TN08010203 015 – 2000	Middle Fork Obion River	Weakley	6.40	Nonirrigated Crop Production Channelization
TN08010204 007 - 0100	Buck Creek	Crockett Gibson	29.40	Nonirrigated Crop Production Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010204 010 - 0900	De Loach Creek	Madison	13.40	Nonirrigated Crop Production Channelization
TN08010204 010 - 1100	Matthews Creek	Madison	16.10	Nonirrigated Crop Production Channelization
TN08010210 022 - 1000	Grays Creek	Shelby Fayette	15.8	Nonirrigated Crop Production Channelization
TN08010211 00720– 3000	Nonconnah Creek	Shelby Fayette	6.5	Nonirrigated Crop Production Channelization
TN08010205 012 – 1000	South Fork Forked Deer River	Crockett Madison	21.6	Nonirrigated Crop Production Channelization
TN06030003 552 – 1000	Gum Creek	Franklin	12.90	Nonirrigated Crop Production Channelization
TN06040001 043 - 1000	Whiteoak Creek	Hardin	15.10	Nonirrigated Crop Production Channelization
TN06040005 019 – 1000	Blood River	Henry	5.60	Nonirrigated Crop Production Channelization
TN06040005 032 –0300	Morris Creek	Carroll Henderson	15.24	Nonirrigated Crop Production Channelization
TN08010100 001 - 0110	Old Graveyard Slough	Lake	13.01	Nonirrigated Crop Production Channelization
TN08010202 001 - 0200	Johnson Creek	Obion Dyer	10.9	Nonirrigated Crop Production Channelization
TN08010202 001 – 2000	Obion River	Dyer	23	Nonirrigated Crop Production Channelization
TN08010202 003 - 1000	Reeds Creek	Dyer Gibson	8.3	Nonirrigated Crop Production Channelization
TN08010202 009 - 1000	North Fork Obion River	Obion Weakley	14.61	Nonirrigated Crop Production Channelization
TN08010202 014 - 0500	Owl Branch	Weakley	2.73	Nonirrigated Crop Production Channelization
TN08010202 024 - 0100	Wolf Creek	Obion	5.30	Nonirrigated Crop Production Channelization
TN08010202 024 - 0200	Walnut Grove Creek	Obion	6.20	Nonirrigated Crop Production Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010202 024 - 0300	Trouble Creek	Weakley	4.70	Nonirrigated Crop Production Channelization
TN08010202 024 - 0400	Jones Branch	Weakley	5.20	Nonirrigated Crop Production Channelization
TN08010202 024 - 1000	Richland Creek	Weakley Obion	12.20	Nonirrigated Crop Production Channelization
TN08010202 027 - 1000	Richland Creek	Obion	11.20	Nonirrigated Crop Production Channelization
TN08010202 028 - 1000	Clover Creek	Obion	11.70	Nonirrigated Crop Production Channelization
TN08010202 048 - 1000	Cloverdale Creek	Obion Dyer	8.70	Nonirrigated Crop Production Channelization
TN08010202 054 - 1000	Biffle Creek	Dyer	7.80	Nonirrigated Crop Production Channelization
TN08010202 419 - 1000	Hoosier Creek	Obion	10.30	Nonirrigated Crop Production Channelization
TN08010203 001 - 0500	Bear Creek	Weakley Carroll	16.20	Nonirrigated Crop Production Channelization
TN08010203 001 – 1000 &2000	South Fork Obion River	Obion Weakley Gibson	42.80	Nonirrigated Crop Production Channelization
TN08010203 015 – 3000	Middle Fork Obion River	Weakley Henry	19.90	Nonirrigated Crop Production Channelization
TN08010203 032 – 1000 &2000	Rutherford Fork Obion River	Obion Gibson	29.90	Nonirrigated Crop Production Channelization
TN08010203 032 – 1900	Camp Creek	Gibson	11.80	Nonirrigated Crop Production Channelization
TN08010203 032 – 2100	Owen Creek	Gibson	5.80	Nonirrigated Crop Production Channelization
TN08010203 032 – 2200	Cummings Creek	Gibson	3.41	Nonirrigated Crop Production Channelization
TN08010204 004 - 0100	Parker Ditch	Dyer	9.58	Nonirrigated Crop Production Channelization
TN08010204 005 - 0100	Odell Creek	Crockett	7.65	Nonirrigated Crop Production Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010204 005 - 0200	Rice Creek	Crockett	5.12	Nonirrigated Crop Production Channelization
TN08010204 005 - 0300	Miller Creek	Dyer Crockett	9.92	Nonirrigated Crop Production Channelization
TN08010204 005 - 1000	Stokes Creek	Dyer	8.24	Nonirrigated Crop Production Channelization
TN08010204 009 - 0100	Sand Creek	Crockett	14.29	Nonirrigated Crop Production Channelization
TN08010204 010 - 0100	Barnett Branch	Gibson	15.60	Nonirrigated Crop Production Channelization
TN08010204 010 - 0400	Crooked Creek	Madison	5.00	Nonirrigated Crop Production Channelization
TN08010204 010 - 0600	Johnson Creek	Madison	11.00	Nonirrigated Crop Production Channelization
TN08010204 010 - 1300	Warren Ditch	Crockett	9.00	Nonirrigated Crop Production Channelization
TN08010204 016 - 1000	Sugar Creek	Gibson Crockett	26.50	Nonirrigated Crop Production Channelization
TN08010204 017 – 0110	Reagan Creek	Gibson	13.30	Nonirrigated Crop Production Channelization
TN08010204 020 – 0100	Buzzard Roost Creek	Gibson	5.28	Nonirrigated Crop Production Channelization
TN08010204 020 – 0200	Rogers Branch	Gibson	4.59	Nonirrigated Crop Production Channelization
TN08010204 020 – 0300	Unnamed Trib To North Fork Forked Deer River	Gibson	4.87	Nonirrigated Crop Production Channelization
TN08010204 020 – 0500	Bee Creek	Gibson	2.64	Nonirrigated Crop Production Channelization
TN08010204 020 – 0600	Hog Creek	Gibson	6.20	Nonirrigated Crop Production Channelization
TN08010204 020 – 0700	Wallsmith Branch	Gibson	6.80	Nonirrigated Crop Production Channelization
TN08010204 020 – 0800	Parker Branch	Gibson	12.00	Nonirrigated Crop Production Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010204 020 – 0900	Cain Creek	Gibson	27.10	Nonirrigated Crop Production Channelization
TN08010204 020 – 1000	North Fork Forked Deer River	Gibson	10.90	Nonirrigated Crop Production Channelization
TN08010204 020 - 3000	North Fork Forked Deer River	Gibson	9.70	Nonirrigated Crop Production Channelization
TN08010205 001 – 0300	Chambers Branch	Lauderdale	8.70	Nonirrigated Crop Production Channelization
TN08010205 005 –0200	Meridian Creek	Haywood	36.29	Nonirrigated Crop Production Channelization
TN08010205 005 –1000	Nixon Creek	Haywood	20.4	Nonirrigated Crop Production Channelization
TN08010205 010 –0200	Jacobs Creek	Haywood	25.9	Nonirrigated Crop Production Channelization
TN08010205 011 - 0100	Pearsons Creek	Crockett	13.9	Nonirrigated Crop Production Channelization
TN08010205 012 - 1100	Johnson Creek	Madison	44.2	Nonirrigated Crop Production Channelization
TN08010205 036 - 0200	Sumrow Creek	Lauderdale	9.64	Nonirrigated Crop Production Channelization
TN08010207 031 - 1000	Cypress Creek	McNairy	16.7	Nonirrigated Crop Production Channelization
TN08010208 001 -0800	Wade Creek	Hardeman Chester	26.9	Nonirrigated Crop Production Channelization
TN08010208 001 -1800	Hickory Creek	Hardeman	25.5	Nonirrigated Crop Production Channelization
TN08010208 007 -1000	Big Muddy Creek	Haywood	7.5	Nonirrigated Crop Production Channelization
TN08010208 007 -2000	Big Muddy Creek	Haywood	17.2	Nonirrigated Crop Production Channelization
TN08010208 009 - 1000	Poplar Creek	Haywood Fayette	17.8	Nonirrigated Crop Production Channelization
TN08010208 011 - 2000	Bear Creek	Fayette	7.9	Nonirrigated Crop Production Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010208 029 - 0100	Dry Creek	Hardeman Madison	22.1	Nonirrigated Crop Production Channelization
TN08010208 034 - 1000	Cane Creek	Lauderdale	14.1	Nonirrigated Crop Production Channelization
TN08010208 034 - 2000	Cane Creek	Lauderdale	6.66	Nonirrigated Crop Production Channelization
TN08010208 062 - 1000	Jeffers Creek	Haywood Madison	10.8	Nonirrigated Crop Production Channelization
TN08010209 015 – 1000	Little Cypress Creek	Fayette	17.14	Nonirrigated Crop Production Channelization
TN08010209 016 – 0100	West Beaver Creek	Shelby Tipton	30.95	Nonirrigated Crop Production Channelization
TN08010209 016 – 0200	Middle Beaver Creek	Tipton	65.37	Nonirrigated Crop Production Channelization
TN08010209 016 – 1000	Beaver Creek	Shelby	30.38	Nonirrigated Crop Production Channelization
TN08010209 021 – 0300	North Fork Creek	Shelby Tipton	37.6	Nonirrigated Crop Production Channelization
TN08010209 021 – 0600	Crooked Creek Canal	Shelby	31.21	Nonirrigated Crop Production Channelization
TN08010209 021 – 3000	Big Creek	Shelby Tipton	27.75	Nonirrigated Crop Production Channelization
TN08010202 009 - 0710	Hurricane Creek	Weakley	13.60	Nonirrigated Crop Production Channelization Pasture Grazing
TN08010204 010 - 1200	Beech Creek	Madison Crockett	23.80	Nonirrigated Crop Production Channelization Pasture Grazing
TN08010208 056 - 1000	Flat Creek	Tipton	8.1	Nonirrigated Crop Production Channelization Pasture Grazing
TN08010208 065 - 1000	Mathis Creek	Tipton	11.3	Nonirrigated Crop Production Channelization Pasture Grazing
TN08010208 073 - 1000	Richland Creek	Tipton	11	Nonirrigated Crop Production Channelization Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010209 021 – 0200	Royster Creek	Shelby Tipton	37.4	Nonirrigated Crop Production Channelization Pasture Grazing
TN08010210 004 – 0500	Russell Creek	Fayette	12.8	Nonirrigated Crop Production Channelization Pasture Grazing
TN08010208 1866 - 1000	Carter Creek	Haywood	6.4	Nonirrigated Crop Production Channelization Source Unknown
TN08010204 003 - 0300	Tucker Creek	Crockett	8.74	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010204 003 - 1000	Pond Creek	Dyer Crockett	24.70	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010204 007 - 1000	Middle Fork Forked Deer River	Gibson Crockett	15.30	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010204 009 - 1000	Cypress Creek	Crockett	13.00	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010204 017 – 0100	Davis Creek	Gibson	32.60	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010204 017 – 1000	Buck Creek	Gibson	39.80	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010204 022 - 1000	Doakville Creek	Dyer	9.50	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010205 001 – 0200	Mill Creek	Lauderdale	27.20	Nonirrigated Crop Production Channelization Undetermined Pathogen Source

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010205 001 – 1000	South Fork Forked Deer River	Lauderdale Dyer	15.60	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010205 003 – 1000	South Fork Forked Deer River	Crockett Lauderdale	6.80	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010205 010 - 1000	South Fork Forked Deer River	Haywood Crockett	13.2	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010205 036 - 0110	Unnamed Trib To Tisdale Creek	Lauderdale	2.89	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010205 036 - 1000	Halls Creek	Lauderdale	15.77	Nonirrigated Crop Production Channelization Undetermined Pathogen Source
TN08010202 001 – 1000	Obion River	Dyer	28.6	Nonirrigated Crop Production Channelization Undetermined Source
TN08010202 001- 3000	Obion River	Dyer Obion	14	Nonirrigated Crop Production Channelization Undetermined Source
TN08010202 001 - 4000	Obion River	Obion	7.6	Nonirrigated Crop Production Channelization Undetermined Source
TN08010202 003 - 0100	Cool Springs Branch	Dyer Gibson	22.1	Nonirrigated Crop Production Channelization Undetermined Source
TN08010208 002 -1000	Indian Creek	Tipton	12.1	Nonirrigated Crop Production Channelization Undetermined Source
TN08010209 014 – 1000	Laurel Creek	Fayette	38.2	Nonirrigated Crop Production Channelization Undetermined Source

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010202 029 – 1000	Running Reelfoot Bayou	Obion Lake	23.80	Nonirrigated Crop Production Channelization Upstream Impoundment Landfill
TN08010208 007 -0400	Unnamed Trib To Big Muddy Creek	Fayette	17.85	Nonirrigated Crop Production Irrigated Crop Production Channelization
TN05130205 015T - 1900	Budds Creek	Montgomery	13.90	Nonirrigated Crop Production Pasture Grazing
TN05130205 015T - 1910	Antioch Creek	Montgomery	15.80	Nonirrigated Crop Production Pasture Grazing
TN05130206 002 - 5000	Red River	Robertson	3.30	Nonirrigated Crop Production Pasture Grazing
TN06030003 044 – 0700	Caldwell Creek	Grundy	14.10	Nonirrigated Crop Production Pasture Grazing
TN06040001 643 – 0200	Sulphur Fork Cub Creek	Decatur Henderson	30.26	Nonirrigated Crop Production Pasture Grazing
TN06040004 001 – 0200	Black Branch	Humphreys	10.07	Nonirrigated Crop Production Pasture Grazing
TN08010208 001 -0200	Copper Springs Creek	Lauderdale	13.9	Nonirrigated Crop Production Pasture Grazing
TN08010208 033 - 0100	Camp Creek	Lauderdale Haywood	20.2	Nonirrigated Crop Production Pasture Grazing
TN08010209 021 – 0110	Bear Creek	Shelby Tipton	14.5	Nonirrigated Crop Production Pasture Grazing
TN06020001 029 – 0100	Wolfe Branch	Hamilton	6.30	Non-irrigated Crop Production Pasture Grazing
TN06030003 567 – 1000	Hessey Branch	Franklin	9.60	Nonirrigated Crop Production Pasture Grazing Channelization
TN06040001 802 – 0100	Turkey Creek	Decatur	16.70	Nonirrigated Crop Production Pasture Grazing Channelization
TN08010204 004 - 0200	Bethel Branch	Dyer Gibson	30.40	Nonirrigated Crop Production Pasture Grazing Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010208 001 -0400	Unnamed Trib To Hatchie River	Lauderdale	21.41	Nonirrigated Crop Production Source Unknown
TN05130206 039 - 0150	Spring Creek	Montgomery	22.50	Nonirrigated Crop Production Sources Outside State
TN08010100 001 - 0200	Blue Bank Bayou	Lake	15.46	Nonirrigated Crop Production Undetermined Source
TN08010209 010 – 1000	Jones Creek	Fayette	36.9	Nonirrigated Crop Production Undetermined Source
TN08010209 021 – 0100	Jakes Creek	Shelby	22.8	Nonirrigated Crop Production Undetermined Source
TN06030002 1216 - 0210	Washburn Branch	Lincoln	14.56	Nonirrigated Crop Production Upstream Impoundment
TN08010202 014 - 0300	Claypit Creek	Weakley	3.80	Nonirrigated Crop Production Upstream Impoundment
TN08010202 040T - 0500	Indian Creek	Obion	11.50	Nonirrigated Crop Production Upstream Impoundment
TN08010202 014 - 0400	Strawberry Branch	Weakley	1.92	Nonirrigated Crop Production Upstream Impoundment Channelization
TN08010203 015 - 0600	Thompson Creek	Weakley	6.20	Nonirrigated Crop Production Upstream Impoundment Channelization
TN08010202 036 - 1000	Reelfoot Creek	Obion	8.00	Nonirrigated Crop Production Upstream Impoundment Channelization Pasture Grazing
TN05130206 034 - 1000	Little West Fork	Montgomery	9.90	NPS Pollution from Military Bases
TN05130206 034 - 2000	Little West Fork	Montgomery	3.31	NPS Pollution from Military Bases
TN06010103 034 – 0320	Furnace Creek	Johnson	15.51	Off-Road Vehicles
TN06010207 020 – 0500	Cow Creek	Anderson	6.50	Off-Road Vehicles
TN06030004 026_0111	Unnamed Trib To Anderson Creek	Giles Lawrence	1.19	Off-road Vehicles
TN06030004 026_0115	Anderson Creek	Giles	0.54	Off-road Vehicles
TN06030004 026_0112	Fanny Branch	Giles Lawrence	2.18	Off-road Vehicles Silviculture
TN08010205 012 - 1400	Panther Creek	Madison Heywood	21.1	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06040002 002 – 0310	East Fork Of Globe Creek	Marshall	7.25	Pasture Grazing
TN05130108 002 – 0200	Goose Creek	Smith	3.14	Pasture Grazing
TN06010108 510 - 2000	Little Limestone Creek	Washington	13.50	Pasture Grazing
TN06010204 004 - 2000	Bat Creek	Monroe	11.92	Pasture Grazing
TN06010206 008 – 2000	Russell Creek	Claiborne	7.00	Pasture Grazing
TN05130108 002 – 2000	Hickman Creek	Smith DeKalb	10.16	Pasture Grazing
TN05130108 033 – 0300	Taft Creek	Bledsoe	2.00	Pasture Grazing
TN05130108 045 – 0100	Cane Creek	Putnam	19.10	Pasture Grazing
TN05130108 045 – 0300	Hudgens Creek	Putnam	6.70	Pasture Grazing
TN05130201 021 – 2000	Round Lick Creek	Wilson	3.96	Pasture Grazing
TN05130204 002 –2000	Jones Creek	Dickson	7.00	Pasture Grazing
TN05130204 002 –3000	Jones Creek	Dickson	8.10	Pasture Grazing
TN05130206 024 - 0150	Summers Branch	Robertson Sumner	12.60	Pasture Grazing
TN06010102 042 – 1000	Beaver Creek	Sullivan	11.1	Pasture Grazing
TN06010102 045 – 1000	Fall Creek	Sullivan	6.25	Pasture Grazing
TN06010102 057 – 1000	Kendrick Creek	Sullivan Washington	4.80	Pasture Grazing
TN06010102 702 – 0100	Possum Creek	Washington	3.90	Pasture Grazing
TN06010102 702 – 1000	Cedar Creek	Washington	10.10	Pasture Grazing
TN06010102 729 – 1000	Rock Springs Branch	Sullivan	6.60	Pasture Grazing
TN06010103 006 – 0100	Carroll Creek	Washington	4.30	Pasture Grazing
TN06010103 013 – 0811	Gouge Creek	Carter	1.36	Pasture Grazing
TN06010103 034 – 0311	Crooked Branch	Johnson	6.6	Pasture Grazing
TN06010103 046 – 1000	Sinking Creek	Washington Carter	10	Pasture Grazing
TN06010103 635 – 1000	Knob Creek	Washington	12.3	Pasture Grazing
TN06010104 011 - 0950	Alexander Creek	Hawkins	12.5	Pasture Grazing
TN06010104 011 - 1100	Smith Creek	Hawkins	4.6	Pasture Grazing
TN06010104 019 - 1000	Flat Creek	Union Knox	16.3	Pasture Grazing
TN06010108 033 - 1000	Pigeon Creek	Greene	8.80	Pasture Grazing
TN06010201 027 – 0400	Peppermint Branch	Blount	2.70	Pasture Grazing
TN06010204 004 - 1000	Bat Creek	Monroe	7.09	Pasture Grazing
TN06010207 014 – 1000	Bullrun Creek	Knox Anderson	11.80	Pasture Grazing
TN06010207 016 – 0100	Buffalo Creek	Anderson	19.90	Pasture Grazing
TN06020002 005 - 1000	Candies Creek	Bradley	9.65	Pasture Grazing
TN06020002 009 –1000	South Mouse Creek	Bradley	12.10	Pasture Grazing
TN06020002 082 – 0300	Middle Creek	McMinn Monroe	15.50	Pasture Grazing
TN06040003 019 – 2000	Big Bigby Creek	Maury	4.60	Pasture Grazing
TN06040003 023 – 0100	Quality Creek	Maury	7.10	Pasture Grazing
TN06040003 027 – 1000	Little Bigby Creek	Maury	18.77	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06040004 001 – 0700	Marrs Branch	Perry	4.55	Pasture Grazing
TN08010210 003 – 0100	Johnson Creek	Shelby Fayette	10.4	Pasture Grazing
TN06010207 011 – 1000	Beaver Creek	Knox	22.50	Pasture Grazing
TN06010103 006 – 1000	Boones Creek	Washington	19.31	Pasture Grazing
TN06020002 084 - 1000	North Mouse Creek	McMinn	22.61	Pasture Grazing
TN06010103 034 – 2000	Roan Creek	Johnson	6	Pasture Grazing
TN06010208 004 – 1000	Crooked Fork	Morgan	6.90	Pasture Grazing
TN05130204 016 – 2000	Harpeth River	Williamson	3.9	Pasture Grazing
TN06030004 017 – 2000	Richland Creek	Giles	26.70	Pasture Grazing
TN06010206 008 – 1000	Russell Creek	Claiborne	8.10	Pasture Grazing
TN05130106 007-0500 &0550	Flat Creek	Overton	23.6	Pasture Grazing
TN05130106 010-2000	Spring Creek	Putnam Overton	20.7	Pasture Grazing
TN05130107 012 – 0100	Locke Branch	Warren	4.56	Pasture Grazing
TN05130107 012 – 0400	West Fork Hickory Creek	Coffee	54.54	Pasture Grazing
TN05130107 012 – 0410	Meadow Branch	Coffee	7.89	Pasture Grazing
TN05130108 001 – 0100	Snow Creek	Smith	7.60	Pasture Grazing
TN05130108 001 – 0200	Ferguson Branch	Smith	5.80	Pasture Grazing
TN05130108 025 – 0200	Cliff Creek	White	4.70	Pasture Grazing
TN05130108 025 – 0400	Hickory Valley Branch	White	8.20	Pasture Grazing
TN05130108 033 – 0200	Beaverdam Creek	Bledsoe	19.90	Pasture Grazing
TN05130108 033 – 0410	Mill Creek	Bledsoe	1.95	Pasture Grazing
TN05130108 033 – 0420	Bradden Creek	Bledsoe	10.70	Pasture Grazing
TN05130108 033 – 3000	Bee Creek	Bledsoe Cumberland	16.10	Pasture Grazing
TN05130108 043 – 0100	Cherry Creek	White	11.80	Pasture Grazing
TN05130108 043 – 0500	Blue Spring Creek	White	10.10	Pasture Grazing
TN05130108 043 – 0600	Wildcat Creek	White	8.10	Pasture Grazing
TN05130108 045 – 0500	Post Oak Creek	White	1.36	Pasture Grazing
TN05130108 053 – 1000	Taylor Creek	White	31.80	Pasture Grazing
TN05130201 001T-1600	Brunley Branch	Wilson	2.13	Pasture Grazing
TN05130201 001T-1700	Dry Fork Branch	Wilson	7.9	Pasture Grazing
TN05130201 013-0300	Black Branch	Wilson	3.29	Pasture Grazing
TN05130201 021-0400	Beech Log Creek	Wilson	8.5	Pasture Grazing
TN05130201 021 – 3000	Round Lick Creek	Wilson	3.16	Pasture Grazing
TN05130201 028-0100	Little Goose Creek	Trousdale	12.7	Pasture Grazing
TN05130202 014 – 0900	Blue Spring Creek	Cheatham	9.80	Pasture Grazing
TN05130203 018 – 0210	Christmas Creek	Rutherford	12.30	Pasture Grazing
TN05130203 025 –2000	Cripple Creek	Rutherford	5.40	Pasture Grazing
TN05130203 026 – 2000	East Fork Stones River	Cannon	6.50	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN05130203 232 – 1000	Suggs Creek	Davidson Wilson	18.10	Pasture Grazing
TN05130204 002 –0400	Will Hall Creek	Dickson	0.96	Pasture Grazing
TN05130204 002 –0410	Creech Hollow Creek	Dickson	0.50	Pasture Grazing
TN05130204 009 –0600	Murray Branch	Williamson	3.60	Pasture Grazing
TN05130204 009 –0700	Brown Creek	Williamson	5.30	Pasture Grazing
TN05130204 010 – 0600	Bedford Creek	Williamson	5.67	Pasture Grazing
TN05130204 010 – 0800	Arkansas Creek	Williamson	11.17	Pasture Grazing
TN05130204 013 – 0100	Hatcher Spring Creek	Williamson	6.50	Pasture Grazing
TN05130204 013 – 0200	Polk Creek	Williamson	8.80	Pasture Grazing
TN05130204 013 – 0300	Unnamed Trib To West Harpeth River	Williamson	1.80	Pasture Grazing
TN05130204 013 – 0700	Murfrees Fork	Williamson	6.20	Pasture Grazing
TN05130204 013 – 0710	Rattlesnake Branch	Williamson	6.50	Pasture Grazing
TN05130204 013 – 0730	West Prong Murfrees Fork	Williamson	6.00	Pasture Grazing
TN05130204 013 – 0750	Murfrees Fork	Williamson	18.40	Pasture Grazing
TN05130204 013 – 2000	West Harpeth River	Williamson	10.9	Pasture Grazing
TN05130204 016 – 0800	Mccrory Creek	Williamson	18.5	Pasture Grazing
TN05130204 016 – 1200	Fivemile Creek	Williamson	14.4	Pasture Grazing
TN05130204 016 – 3000	Harpeth River	Williamson	9	Pasture Grazing
TN05130204 016 – 4000	Harpeth River	Williamson	7.5	Pasture Grazing
TN05130204 018 – 0220	Unnamed Trib To Concord Creek(Previously Unnamed Trib To Harpeth River)	Rutherford	1.23	Pasture Grazing
TN05130204 018 – 0300	Kelley Creek	Rutherford	5.91	Pasture Grazing
TN05130204 018 – 0400	Cheatham Branch	Rutherford	3.4	Pasture Grazing
TN05130204 018 – 3000	Harpeth River	Rutherford	7.39	Pasture Grazing
TN05130205 020 - 1000	East Fork Yellow Creek	Montgomery	5.50	Pasture Grazing
TN05130205 024 - 0600	Little Bartons Creek	Montgomery Dickson	35.10	Pasture Grazing
TN05130206 002 - 0300	Spring Creek	Robertson	12.25	Pasture Grazing
TN05130206 002 - 0400	Buzzard Creek	Robertson	11.00	Pasture Grazing
TN05130206 002 - 2000	Red River	Montgomery	22.90	Pasture Grazing
TN05130206 003 - 0300	Peppers Branch	Robertson	4.20	Pasture Grazing
TN05130206 003 - 1360	Browns Fork	Robertson	6.20	Pasture Grazing
TN05130206 019 - 1000	South Fork Red River	Robertson	12.90	Pasture Grazing
TN06010102 003 – 0100	Mill Creek	Sullivan	6.60	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06010102 003 – 0200	Unnamed Trib To Horse Creek	Sullivan Washington	3.80	Pasture Grazing
TN06010102 003 – 0400	Walker Fork Creek	Sullivan	6.26	Pasture Grazing
TN06010102 003 – 0410	Lynch Branch	Sullivan	3.06	Pasture Grazing
TN06010102 003 – 0500	Bear Creek	Sullivan	4.60	Pasture Grazing
TN06010102 003 – 3000	Horse Creek	Sullivan	4.35	Pasture Grazing
TN06010102 004T – 0100	Russell Creek	Sullivan	5.5	Pasture Grazing
TN06010102 006T – 0300	Candy Creek	Sullivan	3.2	Pasture Grazing
TN06010102 012 – 0100	Unnamed Trib To South Fork Holston River	Sullivan	2	Pasture Grazing
TN06010102 012 – 0200	Paddle Creek	Sullivan	4.44	Pasture Grazing
TN06010102 012 – 0300	Unnamed Trib To South Fork Holston River	Sullivan	3.89	Pasture Grazing
TN06010102 012 – 0400	Morrell Creek	Sullivan	4.89	Pasture Grazing
TN06010102 012 – 0900	Weaver Branch	Sullivan	5.9	Pasture Grazing
TN06010102 0250 – 0700	Corum Branch	Johnson	1.96	Pasture Grazing
TN06010102 0250 – 0800	Flatwood Branch	Johnson	2.07	Pasture Grazing
TN06010102 0250 – 1300	Waters Branch	Johnson	1.83	Pasture Grazing
TN06010102 0250 – 2000	Laurel Creek	Johnson	3.8	Pasture Grazing
TN06010102 046 – 0900	Timbertree Branch	Sullivan	1.92	Pasture Grazing
TN06010102 046 – 3000	Reedy Creek	Sullivan	6.00	Pasture Grazing
TN06010102 047 – 0200	Red River	Washington	6.60	Pasture Grazing
TN06010102 0540 – 0800	Painter Spring Branch	Sullivan	1.02	Pasture Grazing
TN06010102 237 – 0100	Booher Creek	Sullivan	7.20	Pasture Grazing
TN06010102 237 – 1000	Muddy Creek	Sullivan	12.30	Pasture Grazing
TN06010103 011 – 1000	Buffalo Creek	Carter	6.08	Pasture Grazing
TN06010103 020T – 0200	Sink Branch	Johnson	3.14	Pasture Grazing
TN06010103 034 – 1000	Roan Creek	Johnson	6.8	Pasture Grazing
TN06010104 001 - 0900	Beaver Creek	Jefferson	21	Pasture Grazing
TN06010104 004T - 0900	Renfroe Creek	Hawkins	6.9	Pasture Grazing
TN06010104 004T - 1100	Stock Creek	Hawkins	4.2	Pasture Grazing
TN06010104 004T - 1250	Caney Creek	Hawkins	16.8	Pasture Grazing
TN06010104 004T - 1510	Three Forks Branch	Hawkins	1.96	Pasture Grazing
TN06010104 004T - 1610	Walker Branch	Hawkins	1.53	Pasture Grazing
TN06010104 004T - 1700	War Creek	Hawkins	3	Pasture Grazing
TN06010104 004T - 1800	Unnamed Trib To Holston River	Hawkins	1.61	Pasture Grazing
TN06010104 004T - 1900	Fall Creek	Hamblen	8.07	Pasture Grazing
TN06010104 011 - 0100	Sinking Creek	Hawkins	2.7	Pasture Grazing
TN06010104 011 - 0200	Washboard Creek	Hawkins	1.32	Pasture Grazing
TN06010104 011 - 0300	Forgey Creek	Hawkins	3.6	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06010104 011 - 0500	Stoney Point Creek	Hawkins	13.1	Pasture Grazing
TN06010104 011 - 0610	Renfroe Creek	Hawkins	12.5	Pasture Grazing
TN06010104 011 - 0800	Hord Creek	Hawkins	8.9	Pasture Grazing
TN06010104 015 - 0500	Caney Creek	Hawkins	10.7	Pasture Grazing
TN06010104 015 - 0600	Stanley Creek	Hawkins	7.7	Pasture Grazing
TN06010104 015 - 0700	Unnamed Trib To Big Creek	Hawkins	2.28	Pasture Grazing
TN06010104 018 - 1000	Richland Creek	Grainger	26.7	Pasture Grazing
TN06010105 001 - 0100	Clear Creek	Cocke	28	Pasture Grazing
TN06010105 001 - 0200	Long Creek	Cocke	19.60	Pasture Grazing
TN06010106 001 – 1100	English Creek	Cocke	15.30	Pasture Grazing
TN06010107 003 - 0120	Happy Creek	Sevier	17.20	Pasture Grazing
TN06010107 003 - 1000	Boyds Creek	Sevier	15.40	Pasture Grazing
TN06010107 007 - 1600	Middle Creek	Sevier	16.70	Pasture Grazing
TN06010107 029T - 0600	Clay Creek	Cocke	22.30	Pasture Grazing
TN06010107 029T - 1100	Clear Creek	Jefferson	3.30	Pasture Grazing
TN06010107 029T - 1150	Clear Creek	Jefferson Cocke	13.60	Pasture Grazing
TN06010108 001 - 0100	Flat Creek	Hamblen	4.90	Pasture Grazing
TN06010108 001 - 0110	Robinson Creek	Hamblen	3.40	Pasture Grazing
TN06010108 005 - 0310	Privet Branch	Greene	1.40	Pasture Grazing
TN06010108 009 - 0300	Cedar Creek	Greene	5.40	Pasture Grazing
TN06010108 010 - 0500	Pudding Creek	Greene	5.50	Pasture Grazing
TN06010108 010 - 0600	Ripley Creek	Greene	8.50	Pasture Grazing
TN06010108 010 - 0900	Snapp Branch	Washington	1.90	Pasture Grazing
TN06010108 010 - 1200	Knave Branch	Washington	4.60	Pasture Grazing
TN06010108 010 - 1300	Keplinger Creek	Washington	5.30	Pasture Grazing
TN06010108 010 - 1400	Lebanon Branch	Washington	1.90	Pasture Grazing
TN06010108 010 - 3800	Wolf Branch	Greene	1.30	Pasture Grazing
TN06010108 030 - 0200	Jockey Creek	Greene	8.00	Pasture Grazing
TN06010108 030 - 0400	Clear Fork	Washington	12.00	Pasture Grazing
TN06010108 030 - 0410	Blackley Creek	Washington	16.00	Pasture Grazing
TN06010108 030 - 0420	Unnamed Trib To Clear Fork	Washington	6.90	Pasture Grazing
TN06010108 030 - 0430	Muddy Fork	Washington	23.80	Pasture Grazing
TN06010108 030 - 0431	Leesburg Branch	Washington	3.40	Pasture Grazing
TN06010108 030 - 1000	Big Limestone Creek	Greene Washington	3.10	Pasture Grazing
TN06010108 030 - 2000	Big Limestone Creek	Washington	8.80	Pasture Grazing
TN06010108 033 - 0100	Buffalo Creek	Greene	3.00	Pasture Grazing
TN06010108 035 - 0200	Potter Creek	Greene	15.30	Pasture Grazing
TN06010108 035 - 0400	Mud Creek	Greene	4.40	Pasture Grazing
TN06010108 035 - 0700	Lick Branch	Greene	1.20	Pasture Grazing
TN06010108 035 - 0900	Puncheon Camp Creek	Greene	11.50	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06010108 035 - 1000	Lick Creek	Greene	3.90	Pasture Grazing
TN06010108 035 - 1110	Babb Creek	Greene	4.60	Pasture Grazing
TN06010108 035 – 1400	Gardiner Creek	Greene	5.40	Pasture Grazing
TN06010108 035 – 1410	Wattenbarger Creek	Greene	5.30	Pasture Grazing
TN06010108 035 – 1800	Pyborn Creek	Greene	6.40	Pasture Grazing
TN06010108 035 – 2000	Lick Creek	Greene	2.30	Pasture Grazing
TN06010108 035 – 2300	Horse Fork	Greene	1.60	Pasture Grazing
TN06010108 035 – 2320	Davis Creek	Greene	2.80	Pasture Grazing
TN06010108 035 – 2400	Hoodley Branch	Greene	5.30	Pasture Grazing
TN06010108 035 – 2521	Possum Creek	Greene	7.50	Pasture Grazing
TN06010108 035 – 2600	Grassy Creek	Greene	12.60	Pasture Grazing
TN06010108 035 – 2800	Mink Creek	Greene	9.10	Pasture Grazing
TN06010108 035 – 2810	Pond Creek	Greene	2.20	Pasture Grazing
TN06010108 035 – 3000	Lick Creek	Greene	7.40	Pasture Grazing
TN06010108 035 – 3100	Wolf Creek	Greene	2.10	Pasture Grazing
TN06010108 035 – 4000	Lick Creek	Greene	4.90	Pasture Grazing
TN06010108 035 – 5000,6000 & 7000	Lick Creek	Greene	36.10	Pasture Grazing
TN06010108 035 - 8000	Lick Creek	Greene	7.20	Pasture Grazing
TN06010108 035 - 9000	Lick Creek	Greene	7.70	Pasture Grazing
TN06010108 042 - 0100	Hale Branch	Hamblen	7.10	Pasture Grazing
TN06010108 042 - 0600	Mud Creek	Hamblen Hawkins	8.20	Pasture Grazing
TN06010108 042 - 0610	Whitehorn Creek	Hamblen Hawkins	17.90	Pasture Grazing
TN06010108 042 - 0612	Coldspring Branch	Hawkins	1.10	Pasture Grazing
TN06010108 042 - 1000	Bent Creek	Hamblen	13.70	Pasture Grazing
TN06010108 043 - 0200	Crider Creek	Jefferson	6.20	Pasture Grazing
TN06010108 043 - 0400	Cedar Creek	Hamblen Jefferson	7.50	Pasture Grazing
TN06010108 043 - 1000	Long Creek	Jefferson Hamblen	13.50	Pasture Grazing
TN06010108 064 – 1000 &2000	Sinking Creek	Greene	23.40	Pasture Grazing
TN06010108 088 – 1000	Horse Creek	Greene	14.28	Pasture Grazing
TN06010108 102 - 0100	Unnamed Trib To Richland Creek	Greene	4.05	Pasture Grazing
TN06010108 102 - 0200	Simpson Creek	Greene	1.87	Pasture Grazing
TN06010108 102 – 0300	Tipton Creek	Greene	1.60	Pasture Grazing
TN06010108 102 - 0400	East Fork Richland Creek	Greene	4.96	Pasture Grazing
TN06010108 510 - 0200	Bacon Branch	Washington	4.60	Pasture Grazing
TN06010108 510 - 0300	Feist Branch	Washington	2.30	Pasture Grazing
TN06010108 510 - 0400	Hominy Creek	Washington	7.00	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06010108 510 - 1000	Little Limestone Creek	Washington	8.00	Pasture Grazing
TN06010108 DCTRIBS- 0100	Mutton Creek	Greene	1.70	Pasture Grazing
TN06010108 DCTRIBS – 0200	Johnson Creek	Greene	1.4.	Pasture Grazing
TN06010201 001T - 0100	Wolf Creek	Rhea	2.49	Pasture Grazing
TN06010201 011 - 1000	Paint Rock Creek	Roane Loudon	12.20	Pasture Grazing
TN06010201 013 - 0100	Mud Creek	McMinn Monroe	7.20	Pasture Grazing
TN06010201 013 - 0200	Greasy Branch	Loudon Monroe	7.30	Pasture Grazing
TN06010201 026 – 0110	Caney Branch	Blount	1.43	Pasture Grazing
TN06010201 026 – 0300	Hollybrook Branch	Blount	2.78	Pasture Grazing
TN06010201 027 – 0300	Rocky Branch	Blount	4.04	Pasture Grazing
TN06010201 028 – 0300	South Fork Crooked Creek	Blount	8.21	Pasture Grazing
TN06010201 031 – 1000	Hesse Creek	Blount	4.50	Pasture Grazing
TN06010201 033 – 0200	Pitner Creek	Blount	13.50	Pasture Grazing
TN06010201 033 - 1000	Ellejoy Creek	Blount	14.78	Pasture Grazing
TN06010201 033 - 2000	Ellejoy Creek	Blount	5.37	Pasture Grazing
TN06010201 034 - 0200	Wildwood Branch	Blount	6.26	Pasture Grazing
TN06010201 034 – 1000	Nails Creek	Blount Sevier	24.50	Pasture Grazing
TN06010201 064 – 1000	Stamp Creek	Roane	13.40	Pasture Grazing
TN06010201 065 – 1000	Steekee Creek	Loudon	11.00	Pasture Grazing
TN06010201 066 – 1000	Stock Creek	Knox	3.77	Pasture Grazing
TN06010201 066 – 1200	Gun Hollow Branch	Knox	1.36	Pasture Grazing
TN06010201 066 – 2000	Stock Creek	Knox	1.98	Pasture Grazing
TN06010201 083 – 1000	Floyd Creek	Loudon Blount	7.70	Pasture Grazing
TN06010201 087 – 1000	Hines Creek	Loudon Roane	20.30	Pasture Grazing
TN06010201 1149 – 1000	Polecat Creek	Loudon	13.10	Pasture Grazing
TN06010204 002 - 1000	Fork Creek	Loudon Monroe	19.3	Pasture Grazing
TN06010204 042 – 0100	Centenary Creek	Blount	3.25	Pasture Grazing
TN06010204 042 – 0300	Sixmile Creek	Blount	16.4	Pasture Grazing
TN06010204 043 – 0200	Binfield Branch	Blount	3.9	Pasture Grazing
TN06010204 043 – 0400	Little Baker Creek	Blount	6.1	Pasture Grazing
TN06010204 043 – 1000	Baker Creek	Blount Loudon	18.22	Pasture Grazing
TN06010204 044 – 0100	Cane Creek	Monroe	29.3	Pasture Grazing
TN06010204 045 – 1000	Notchy Creek	Monroe	11.20	Pasture Grazing
TN06010204 056 – 1000	Big Creek	Monroe	14.65	Pasture Grazing
TN06010204 065 – 1000	Island Creek	Monroe	10.00	Pasture Grazing
TN06010205 001T - 1400	Fall Creek	Union	5.60	Pasture Grazing
TN06010205 013 - 0200	Unnamed Trib To Clinch River	Hancock	1.22	Pasture Grazing
TN06010205 013 - 0600	Rhea Branch	Hancock	1.44	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06010205 013 - 1120	East Fork Painther Creek	Hancock	5.22	Pasture Grazing
TN06010205 016 - 0100	Unnamed Trib To Clinch River	Hancock	0.96	Pasture Grazing
TN06010205 061 - 1000	Little Sycamore Creek	Claiborne	18.70	Pasture Grazing
TN06010206 006 – 0100	Old Town Creek	Claiborne	14.49	Pasture Grazing
TN06010206 006 – 0150	Old Town Creek	Claiborne	6.27	Pasture Grazing
TN06010206 007 – 0800	Mulberry Creek	Hancock	26.60	Pasture Grazing
TN06010206 007 – 0810	Little Mulberry Creek	Claiborne Hancock	4.00	Pasture Grazing
TN06010206 026 – 0100	Cawood Branch	Claiborne	5.20	Pasture Grazing
TN06010206 026 – 0200	Russell Branch	Claiborne	3.50	Pasture Grazing
TN06010206 026 – 1000	Davis Creek	Campbell Claiborne	8.00	Pasture Grazing
TN06010206 026 – 2000	Davis Creek	Claiborne	5.10	Pasture Grazing
TN06010207 014 – 3000	Bullrun Creek	Union Grainger	11.40	Pasture Grazing
TN06010207 016 – 0200	Byrams Creek	Anderson Union	22.40	Pasture Grazing
TN06010207 016 – 1000	Hinds Creek	Anderson	6.70	Pasture Grazing
TN06010207 016 – 3000	Hinds Creek	Anderson Union	8.90	Pasture Grazing
TN06010207 028 – 1000	Caney Creek	Roane	5.00	Pasture Grazing
TN06010208 004 – 0100	Mud Creek	Morgan	5.40	Pasture Grazing
TN06020001 038 – 0100	Hardin Creek	Meigs	3.60	Pasture Grazing
TN06020001 038 – 0200	Goodfield Creek	Meigs	9.70	Pasture Grazing
TN06020001 038 – 0210	Coldwater Branch	Meigs	6.80	Pasture Grazing
TN06020001 041 – 0110	Hurricane Creek	Meigs Roane	12.90	Pasture Grazing
TN06020001 041 – 0300	Little Sewee Creek	Meigs McMinn	22.76	Pasture Grazing
TN06020001 041 – 0330	South Fork Little Sewee Creek	Meigs McMinn	11.61	Pasture Grazing
TN06020001 041 – 0400	Davis Creek	Meigs	9.20	Pasture Grazing
TN06020001 041 – 0500	Black Ankle Creek	Meigs	9.10	Pasture Grazing
TN06020001 041 – 0600	Dry Fork Creek	Meigs	8.00	Pasture Grazing
TN06020001 041 – 0610	Hutsel Branch	Meigs	4.00	Pasture Grazing
TN06020001 041 – 1000	Sewee Creek	Meigs	15.00	Pasture Grazing
TN06020001 041 – 2000	Sewee Creek	Meigs McMinn	16.20	Pasture Grazing
TN06020001 057 – 0400	Hickman Branch	Rhea	5.00	Pasture Grazing
TN06020001 086 – 1000	Grassshopper Creek	Hamilton	8.10	Pasture Grazing
TN06020002 001 - 0100	Agency Creek	Meigs	18.46	Pasture Grazing
TN06020002 001 - 0200	Gunstocker Creek	Meigs Bradley Hamilton	25.00	Pasture Grazing
TN06020002 005 - 0100	Black Fox Creek	Bradley	19.55	Pasture Grazing
TN06020002 005 - 1100	Beaverdam Branch	Bradley	3.07	Pasture Grazing
TN06020002 005 - 1200	Unnamed Trib To Candies Creek	Bradley	1.55	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06020002 005 - 1300	Unnamed Trib To Candies Creek	Bradley	0.95	Pasture Grazing
TN06020002 005 - 3000	Candies Creek	Bradley	9.51	Pasture Grazing
TN06020002 014 – 0100	Little South Chestuee Creek	Bradley Polk	10.61	Pasture Grazing
TN06020002 014 – 1000	South Chestuee Creek	Bradley	8.77	Pasture Grazing
TN06020002 014 – 2000	South Chestuee Creek	Bradley	9.81	Pasture Grazing
TN06020002 018 – 0100	Hawkins Branch	Polk	1.86	Pasture Grazing
TN06020002 018 – 0200	Dairy Branch	Polk	1.78	Pasture Grazing
TN06020002 018 – 0550	Spring Creek	Monroe	7.01	Pasture Grazing
TN06020002 081 – 0700	Dry Creek	Monroe	11.12	Pasture Grazing
TN06020002 082 – 0900	Little Chestuee Creek	McMinn Monroe	13.30	Pasture Grazing
TN06020002 082 – 1300	Big Foot Creek	McMinn	16.00	Pasture Grazing
TN06020002 082 – 2000	Chestuee Creek	McMinn Monroe	17.90	Pasture Grazing
TN06020002 083 – 1000	Oostanaula Creek	McMinn	5.70	Pasture Grazing
TN06020002 083 – 2000	Oostanaula Creek	McMinn	21.10	Pasture Grazing
TN06020002 083 – 4000	Oostanaula Creek	McMinn	8.50	Pasture Grazing
TN06020002 083 – 5000	Oostanaula Creek	Monroe	6.20	Pasture Grazing
TN06020002 084 - 0500	Dry Valley Creek	McMinn	13.30	Pasture Grazing
TN06020002 084 - 2000	North Mouse Creek	McMinn	15.61	Pasture Grazing
TN06020002 085 - 1000	Spring Creek	McMinn	33.80	Pasture Grazing
TN06020002 087 - 1000	Rogers Creek	McMinn	21.60	Pasture Grazing
TN03150101 012 - 0200	Mill Creek	Bradley Polk	20.10	Pasture Grazing
TN03150101 021 - 0110	Marroon Branch	Bradley	4.88	Pasture Grazing
TN03150101 021 - 0200	Weatherly Branch	Bradley	3.98	Pasture Grazing
TN03150101 021 - 0500	Blackburn Branch	Bradley	7.50	Pasture Grazing
TN06020003 001 – 0200	Cloud Branch	Polk	5.20	Pasture Grazing
TN06020003 001 - 0300	Cookson Creek	Polk	22.40	Pasture Grazing
TN06020003 001 - 0400	Fry Branch	Polk	3.80	Pasture Grazing
TN06020003 013.7T- 0300	Grassy Creek	Polk	5.40	Pasture Grazing
TN06020004 001 – 1100	Unnamed Trib To Sequatchie River	Marion	1.70	Pasture Grazing
TN06020004 001 – 1300	Peck Branch	Marion	2.40	Pasture Grazing
TN06020004 001 – 2000	Sequatchie River	Marion Sequatchie	15.16	Pasture Grazing
TN06020004 005 – 0500	Mcwilliams Creek	Bledsoe Sequatchie	11.20	Pasture Grazing
TN06020004 005 – 1000	Sequatchie River	Bledsoe Sequatchie	23.10	Pasture Grazing
TN06020004 007 – 0400	Hall Creek	Bledsoe	10.00	Pasture Grazing
TN06020004 007 – 0600	Little Creek	Bledsoe	8.70	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06020004 007 – 0630	Browns Creek	Bledsoe	2.80	Pasture Grazing
TN06020004 007 – 0800	Swafford Branch	Bledsoe	6.50	Pasture Grazing
TN06020004 007 – 0900	Stephens Branch	Bledsoe Cumberland	8.80	Pasture Grazing
TN06020004 007 – 1000	Sequatchie River	Bledsoe Cumberland	53.10	Pasture Grazing
TN06020004 007 – 1100	Grassy Cove Creek	Cumberland	16.00	Pasture Grazing
TN06020004 007 – 1200	Manning Spring	Cumberland	1.40	Pasture Grazing
TN06020004 007 – 1400	Unnamed Trib To Sequatchie River	Bledsoe	1.40	Pasture Grazing
TN06020004 007 – 2200	Skillern Creek	Bledsoe	10.60	Pasture Grazing
TN06020004 007 – 2800	Unnamed Trib To Sequatchie River	Bledsoe	2.30	Pasture Grazing
TN06020004 008 – 0200	Maise Creek	Bledsoe	4.70	Pasture Grazing
TN06020004 014 – 0100	Daniel Creek	Marion	2.20	Pasture Grazing
TN06030002 1216 - 0211	Harper Creek	Lincoln	3.07	Pasture Grazing
TN06030003 001 – 0100	Reeves Branch	Giles	4.10	Pasture Grazing
TN06030003 010 – 1000	Elk River	Lincoln	13.91	Pasture Grazing
TN06030003 030 – 1000	Boiling Fork Creek	Franklin	32.40	Pasture Grazing
TN06030003 041 – 0100	Yellow Branch	Franklin	7.10	Pasture Grazing
TN06030003 044 – 1000	Elk River	Franklin Grundy	17.90	Pasture Grazing
TN06030003 056 – 0250	East Fork Mulberry Creek	Moore	16.80	Pasture Grazing
TN06030003 060 – 1000	Cane Creek	Lincoln Marshall	44.50	Pasture Grazing
TN06030004 013 – 1000	Elk River	Giles	7.40	Pasture Grazing
TN06030004 023 – 1000	Robertson Fork Creek	Giles Marshall	16.64	Pasture Grazing
TN06030004 043 – 0600	Coffey Branch	Marshall	3.40	Pasture Grazing
TN06030004 043 – 1000	Richland Creek	Giles Marshall	42.00	Pasture Grazing
TN06030005 082 – 0100	Tripptown Branch(Previously Called Big Dry Branch)	Lawrence	7.40	Pasture Grazing
TN06040001 041 - 0200	East Prong Doe Creek	Decatur Henderson	18.10	Pasture Grazing
TN06040001 060 - 2000	Chambers Creek	McNairy	4.00	Pasture Grazing
TN06040001 064 – 2000	Horse Creek	Hardin	25.80	Pasture Grazing
TN06040001 809 – 1000	Rushing Creek	Decatur	45.30	Pasture Grazing
TN06040002 002 – 0300	Globe Creek	Maury Marshall	22.66	Pasture Grazing
TN06040002 002 – 0700	Hurricane Creek	Maury	12.70	Pasture Grazing
TN06040002 008 – 1000	Cedar Creek	Maury Marshall	7.62	Pasture Grazing
TN06040002 012 - 0100	East Rock Creek	Marshall	14.17	Pasture Grazing
TN06040002 012 - 0500	Sanders Creek	Marshall	4.50	Pasture Grazing
TN06040002 012 - 3000	Big Rock Creek	Marshall	6.00	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06040002 021 - 0100	Little Sinking Creek	Bedford	7.60	Pasture Grazing
TN06040002 021 – 1000	Sinking Creek	Bedford	12.00	Pasture Grazing
TN06040002 024 - 0100	Davis Branch	Bedford	2.20	Pasture Grazing
TN06040002 024 - 1000	Sugar Creek	Bedford	21.70	Pasture Grazing
TN06040002 033 - 1000	Wartrace Creek	Bedford	15.00	Pasture Grazing
TN06040002 038 - 0300	Hurricane Creek	Bedford	22.03	Pasture Grazing
TN06040002 038 - 1000	Fall Creek	Bedford	11.40	Pasture Grazing
TN06040002 039 - 0200	Weakley Creek	Bedford	6.20	Pasture Grazing
TN06040002 039 - 0250	Weakley Creek	Bedford Rutherford	13.10	Pasture Grazing
TN06040002 039 - 0300	Alexander Creek	Bedford Rutherford	21.10	Pasture Grazing
TN06040002 039 – 1000	North Fork Creek	Bedford	3.70	Pasture Grazing
TN06040002 039 – 2000	North Fork Creek	Bedford	4.00	Pasture Grazing
TN06040002 039 – 3000	North Fork Creek	Bedford	9.20	Pasture Grazing
TN06040002 046 - 1000	Wilson Creek	Marshall Bedford	19.50	Pasture Grazing
TN06040002 047 - 0100	West Fork Spring Creek	Marshall Williamson	3.50	Pasture Grazing
TN06040002 047 - 0200	East Fork Spring Creek	Marshall Rutherford	3.10	Pasture Grazing
TN06040002 049 - 0400	Wallace Branch	Maury Williamson	3.80	Pasture Grazing
TN06040002 502 - 0220	Shanklin Branch	Coffee	4.87	Pasture Grazing
TN06040003 005 – 0600	Unnamed Trib To Duck River	Humphreys Hickman	17.03	Pasture Grazing
TN06040003 019 - 0200	Patterson Creek	Maury	5.80	Pasture Grazing
TN06040003 019 – 0600	Dog Creek	Maury	9.40	Pasture Grazing
TN06040003 019 – 3000	Big Bigby Creek	Maury	8.35	Pasture Grazing
TN06040003 041 – 1100	Dog Branch	Hickman Maury	13.80	Pasture Grazing
TN06040005 019 – 0100	Rabbit Creek	Henry	4.10	Pasture Grazing
TN06040005 024 – 0600	Brushy Branch	Henry	8.10	Pasture Grazing
TN06040005 032 – 1000	Big Sandy River	Carroll	7.3	Pasture Grazing
TN06040005032-2000	Big Sandy River	Carroll Henderson	12.5	Pasture Grazing
TN06040005 075 - 0300	Little Turkey Creek	Humphreys	3.3	Pasture Grazing
TN08010202 009 - 0700	Biggs Creek	Weakley	2.2	Pasture Grazing
TN08010202 036 - 0200	South Reelfoot Creek	Obion	13.70	Pasture Grazing
TN08010204 014 - 0700	Tyler Branch	Henderson	2.39	Pasture Grazing
TN08010204 014 - 0800	Simmons Branch	Henderson	2.98	Pasture Grazing
TN08010204 014 - 0900	Courtney Branch	Henderson	5.61	Pasture Grazing
TN08010205 023 - 0110	Dry Branch	Chester	12	Pasture Grazing
TN08010207 072 - 0200	Talley Spring Branch	Hardeman	4.3	Pasture Grazing
TN08010208 002 -0500	Myron Creek	Tipton	11.8	Pasture Grazing
TN08010209 016 – 0210	Kelly Creek	Tipton	16.67	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010210 004 – 0400	Unnamed Trib To Wolf River	Fayette	12	Pasture Grazing
TN08010210 004 – 0410	Unnamed Trib To The Unnamed Trib To Wolf River	Fayette	11.6	Pasture Grazing
TN08010210 005 - 0100	Teague Branch	Fayette	17	Pasture Grazing
TN08010210 020 – 0400	Mckinnie Creek	Fayette Hardeman	35.1	Pasture Grazing
TN08010210 020 – 0410	May Creek	Fayette Hardeman	27.1	Pasture Grazing
TN08010210 020 – 0500	North Fork Creek	Fayette Hardeman	39	Pasture Grazing
TN08010210 021 – 0100	Alexander Creek	Fayette	21.8	Pasture Grazing
TN05130108 045 – 1000	Falling Water River	Putnam White	8.80	Pasture Grazing
TN05130201 055-0250	Sinking Creek	Wilson	10	Pasture Grazing
TN05130203 022 –2000	Lytle Creek	Rutherford	10.10	Pasture Grazing
TN05130203 023 –0310	Bear Branch	Rutherford	3.50	Pasture Grazing
TN05130203 029 – 0100	Jarman Branch	Rutherford Wilson	4.40	Pasture Grazing
TN05130203 232 – 0100	North Fork Suggs Creek	Wilson	9.20	Pasture Grazing
TN05130204 009 –0800	Unnamed Trib To Harpeth River	Williamson	2.10	Pasture Grazing
TN05130204 009 – 1100	Beech Creek	Davidson	3.60	Pasture Grazing
TN05130204 016 – 0100	Lynwood Creek	Williamson	5.4	Pasture Grazing
TN06010102 003 – 0600	Little Horse Creek	Sullivan	6.46	Pasture Grazing
TN06010102 006T – 0200	Wagner Creek	Sullivan	5.5	Pasture Grazing
TN06010102 047 – 0100	Ford Creek	Washington	5.50	Pasture Grazing
TN06010104 019 - 2000	Flat Creek	Union Knox	2.8	Pasture Grazing
TN06010107 010 - 1950	Walden Creek	Sevier	8.60	Pasture Grazing
TN06010108 010 - 0300	College Creek	Greene	9.30	Pasture Grazing
TN06010108 010 - 0400	Moon Creek	Greene	8.70	Pasture Grazing
TN06010108 010 - 0750	Rheatown Creek	Greene	6.70	Pasture Grazing
TN06010108 102 - 2000	Richland Creek	Greene	8.51	Pasture Grazing
TN06010108 510 - 0100	Brown Branch	Washington	8.30	Pasture Grazing
TN06010108 510 - 0500	Onion Creek	Washington	4.00	Pasture Grazing
TN06010108 536 - 0200	Little Cherokee Creek	Washington	7.20	Pasture Grazing
TN06010108 DCTRIBS – 0500	Mud Creek	Greene	21.40	Pasture Grazing
TN06010201 028 – 0500	Flag Branch	Blount	7.80	Pasture Grazing
TN06010201 066 – 0100	Casteel Branch	Knox	0.95	Pasture Grazing
TN06010201 066 – 0200	Twin Branch	Knox	1.87	Pasture Grazing
TN06010201 621 – 1000	Caney Creek	Roane	18.2	Pasture Grazing
TN06010205 013 - 0800	Greasy Rock Creek	Hancock	5.67	Pasture Grazing

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06010207 011 – 2000	Beaver Creek	Knox	13.70	Pasture Grazing
TN06010207 011 – 3000	Beaver Creek	Knox	7.50	Pasture Grazing
TN06020001 038 – 1000	Decatur Creek	Meigs	16.50	Pasture Grazing
TN06020002 083 – 0110	Walker Branch	McMinn	1.80	Pasture Grazing
TN03150101 021 - 1000	Coahulla Creek	Bradley	20.90	Pasture Grazing
TN06020003 001 - 0100	Fourmile Creek	Polk	4.80	Pasture Grazing
TN06040003 034 – 0700	Crooked Creek	Maury	2.50	Pasture Grazing
TN06040003 034 – 3000	Rutherford Creek	Maury Williamson	12.50	Pasture Grazing
TN06040003 050 - 0620	Grab Creek	Dickson	3.94	Pasture Grazing
TN06030004 043 – 0400	Town Creek	Marshall	12.50	Pasture Grazing
TN06010107 038 - 1000	Dumplin Creek	Jefferson Sevier	19.10	Pasture Grazing Channelization
TN08010210 023 – 1000	Fletcher Creek	Shelby	10.7	Pasture Grazing Channelization
TN05130206 024 - 1000	Red River	Robertson	6.60	Pasture Grazing Nonirrigated Crop Production
TN06010102 0231.0–2000	Beaverdam Creek	Johnson	6.5	Pasture Grazing Nonirrigated Crop Production
TN06020001 029 – 1000	Savannah Creek	Hamilton	15.00	Pasture Grazing Nonirrigated Crop Production
TN06030003 012 – 0400	Robinson Creek	Franklin Lincoln	11.46	Pasture Grazing Nonirrigated Crop Production
TN06030003 044 – 0100	Betsy Willis Creek	Coffee Grundy	22.50	Pasture Grazing Nonirrigated Crop Production
TN06040002 010 – 0100	Rich Creek	Marshall Bedford	10.81	Pasture Grazing Nonirrigated Crop Production
TN08010100 001 - 0320	Cold Creek	Lauderdale	42.2	Pasture Grazing Nonirrigated Crop Production
TN08010208 011 - 0100	Little Creek	Fayette Hardeman	23.6	Pasture Grazing Nonirrigated Crop Production
TN06040005 023 – 0500	Clifty Creek	Henry	15.80	Pasture Grazing Nonirrigated Crop Production
TN08010205 031 - 1000	Black Creek	Crockett	12.9	Pasture Grazing Nonirrigated Crop Production Channelization
TN05130204 018 – 0200	Concord Creek	Rutherford	13.65	Pasture Grazing Specialty Crop Production

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06030003 063 – 1000	Swan Creek	Lincoln	5.60	Pasture Grazing Specialty Crop Production
TN06010201 033-0100	Little Ellejoy Creek	Blount	14.70	Pasture Grazing Animal Feeding Operation
TN06020002 082 – 1200	Tom Foeman Creek	Monroe	13.10	Pasture Grazing Animal Feeding Operation
TN06010201 015 - 1000	Sweetwater Creek	Loudon	7.75	Pasture Grazing Animal Feeding Operation (NPS)
TN06010201 015 - 3000	Sweetwater Creek	McMinn Monroe	8.68	Pasture Grazing Animal Feeding Operation (NPS)
TN06020002 012 – 0200	Little Chatata Creek	Bradley	14.30	Pasture Grazing Animal Feeding Operations
TN06020002 012 – 1000	Chatata Creek	Bradley	19.62	Pasture Grazing Animal Feeding Operations
TN06030003 056 – 0100	West Fork Mulberry Creek	Lincoln Moore	55.90	Pasture Grazing Animal Feeding Operations
TN06010201 015 – 0100	Bacon Creek	Loudon Monroe	10.20	Pasture Grazing Animal Feeding Operations (NPS) Channelization
TN06010103 061 – 1000	Reedy Creek	Washington	10.7	Pasture Grazing Channelization
TN06010108 005 - 0710	Shelton Branch	Greene	1.23	Pasture Grazing Channelization
TN06010108 DCTRIBS – 0600	Flag Branch	Greene	5.80	Pasture Grazing Channelization
TN06010201 026 – 0100	Roddy Branch	Blount Knox	6.40	Pasture Grazing Channelization
TN06010208 004 – 0200	Flat Fork	Morgan	3.70	Pasture Grazing Channelization
TN06020002 002 - 0100	Sugar Creek	Meigs Bradley	9.00	Pasture Grazing Channelization
TN06020002 009 - 0100	Little South Mouse Creek	Bradley	7.30	Pasture Grazing Channelization
TN06020002 088 - 1000	Price Creek	Meigs	6.90	Pasture Grazing Channelization
TN06040001 043 - 0100	Chalk Creek	Hardin	14.00	Pasture Grazing Channelization
TN06040001 043 - 0200	Mud Creek	Hardin	13.40	Pasture Grazing Channelization
TN06040001 054 – 0100	Owl Creek	McNairy Hardin	42.10	Pasture Grazing Channelization
TN06040001 802 – 1100	Onemile Branch	Henderson	4.81	Pasture Grazing Channelization

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06040005 019 – 0200	South Fork Blood River	Henry	4.95	Pasture Grazing Channelization
TN06040005 027 –1610	Panther Creek	Henry	6.33	Pasture Grazing Channelization
TN06040005 032 – 0720	Little Beaver Creek	Henderson	5.84	Pasture Grazing Channelization
TN08010204 014 – 0100	Dry Creek	Madison Carroll	9.00	Pasture Grazing Channelization
TN08010204 014 - 0600	Spring Creek	Henderson	19.20	Pasture Grazing Channelization
TN08010204 022 - 0100	Harris Creek	Dyer	11.60	Pasture Grazing Channelization
TN08010205 028 - 0600	Unnamed Trib To The North Fork Of The South Fork Forked Deer River	Henderson	10.77	Pasture Grazing Channelization
TN08010207 031 - 1300	Crooked Creek	McNairy	16.7	Pasture Grazing Channelization
TN08010208 066 - 0100	Pugh Creek	Hardeman	4.8	Pasture Grazing Channelization
TN08010209 003 - 0200	Cypress Creek	Shelby Fayette	13.67	Pasture Grazing Channelization
TN08010209 003 - 1000	Clear Creek	Shelby	2.67	Pasture Grazing Channelization
TN08010210 005 - 0200	Stout Creek	Fayette	6.7	Pasture Grazing Channelization
TN08010210 005 - 1000	Grissum Creek	Fayette	17.9	Pasture Grazing Channelization
TN05130201 001T-0100	Rankin Branch	Sumner	3.30	Pasture Grazing Channelization
TN08010202 036 - 0100	North Reelfoot Creek	Obion	20.60	Pasture Grazing Channelization Nonirrigated Crop Production
TN06020004 001 – 0910	Unnamed Trib To Shelton Creek	Marion	6.30	Pasture Grazing Land Application of Biosolids
TN08010210 023 – 0200	Unnamed Trib To Fletcher Creek	Shelby	6.5	Pasture Grazing Livestock Feeding Operations
TN06040005032-0900	Mud Creek	Carroll Henderson	8.53	Pasture Grazing Nonirrigated Crop Production
TN06010204 042 – 1000	Ninemile Creek	Blount	17.1	Pasture Grazing Non-irrigated Crop Production
TN06020001 717 - 1000	Yellow Creek	Rhea	14.90	Pasture Grazing Non-irrigated Row Crops
TN06010103 034 – 0400	Forge Creek	Johnson	33.7	Pasture Grazing Off-Road Vehicles

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06040001 064 – 0400	Kerr Branch	Hardin	1.70	Pasture Grazing Onsite Wastewater System (Septic Tanks)
TN08010208 007 -0200	Catron Creek	Fayette	17.2	Pasture Grazing Permitted Confined Animal Feeding Operation Channelization
TN06010205 001T - 0200	Cuckle Creek	Campbell	6.89	Pasture Grazing Sand/Gravel/Rock Quarry
TN05130101 091 – 0100	Elk Fork Creek	Campbell	15.14	Pasture Grazing Septic Tanks
TN05130101 091 – 0200	Little Elk Creek	Campbell	9.90	Pasture Grazing Septic Tanks
TN06010104 001 - 0500	Roseberry Creek	Knox	20	Pasture Grazing Septic Tanks
TN06010104 001 - 0800	Lost Creek	Jefferson	26.8	Pasture Grazing Septic Tanks
TN06010104 011 - 0400	Surgoinsville Creek	Hawkins	7	Pasture Grazing Septic Tanks
TN06020001 041 – 0100	Ten Mile Creek	Meigs Roane	30.10	Pasture Grazing Septic Tanks
TN03150101 012 - 0100	Sugar Creek	Bradley	12.20	Pasture Grazing Septic Tanks
TN03150101 012 - 0300	Ball Play Creek	Polk	7.44	Pasture Grazing Septic Tanks
TN06020003 014 - 0210	Belltown Creek	Polk	5.10	Pasture Grazing Septic Tanks
TN06020004 001 – 0600	Unnamed Trib To Sequatchie River	Marion	2.04	Pasture Grazing Septic Tanks
TN06030001 057 – 0100	Sweeten (Sweden) Creek	Marion	28.94	Pasture Grazing Septic Tanks
TN06030001 057 - 0921	Hedden Branch	Grundy	1.55	Pasture Grazing Septic Tanks
TN06030001 057 - 0923	Slaughter Pen Hollow Branch	Grundy	1.27	Pasture Grazing Septic Tanks
TN06030001 057 - 0924	Unnamed Trib To Little Fiery Gizzard Creek	Grundy	1.54	Pasture Grazing Septic Tanks
TN06010108 001 - 3000	Nolichucky River	Greene Cocke	9.00	Pasture Grazing Source in Other State
TN06010108 005 - 3000	Nolichucky River	Greene	6.40	Pasture Grazing Source in Other State
TN06010108 010 – 1000	Nolichucky River	Greene	9.40	Pasture Grazing Source in Other State
TN06010108 010 – 3000	Nolichucky River	Greene Washington	22.60	Pasture Grazing Source in Other State

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN08010211 00720– 0410	Unnamed Trib To The Unnamed Trib To Nonconnah Creek	Shelby	2.53	Pasture Grazing Sources Outside State Borders
TN06020002 005 - 2000	Candies Creek	Bradley	16.32	Pasture Grazing Streambank Modifications
TN06010104 004T - 0800	Stone Mountain Branch	Hawkins	2.11	Pasture Grazing Undetermined Source
TN05130108 045 – 0150	Cane Creek	Putnam	12.00	Pasture Grazing Unrestricted Cattle Access
TN05130201 013-3000	Spring Creek	Wilson	9	Pasture Grazing Unrestricted Cattle Access
TN05130201 015-1000	Cedar Creek	Wilson	10.9	Pasture Grazing Unrestricted Cattle Access
TN05130203 018 - 7000	West Fork Stones River	Rutherford	7.20	Pasture Grazing Unrestricted Cattle Access
TN05130203 029 – 0200	Unnamed Trib To Bradley Creek	Rutherford	2.70	Pasture Grazing Unrestricted Cattle Access
TN05130203 029 – 0300	Unnamed Trib To Bradley Creek	Rutherford	1.70	Pasture Grazing Unrestricted Cattle Access
TN05130203 032 – 0200	Cedar Creek	Wilson	1.70	Pasture Grazing Unrestricted Cattle Access
TN05130204 013 – 0720	Cayce Branch	Williamson	5.90	Pasture Grazing Unrestricted Cattle Access
TN05130206 002 - 0200	Elk Fork Creek	Robertson	3.90	Pasture Grazing Unrestricted Cattle Access
TN05130206 003 - 0100	Chambers Spring Branch	Robertson	4.30	Pasture Grazing Unrestricted Cattle Access
TN06010108 005 - 0500	Gregg Branch	Greene	2.70	Pasture Grazing Unrestricted Cattle Access
TN06010108 010 - 1100	Asbury Creek	Washington	2.33	Pasture Grazing Unrestricted Cattle Access
TN06010108 030 - 0100	Cedar Creek	Greene	3.30	Pasture Grazing Unrestricted Cattle Access
TN06010108 030 - 0220	Carson Creek	Greene Washington	17.90	Pasture Grazing Unrestricted Cattle Access

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06010108 035 – 1900	Clear Creek	Greene Washington	19.90	Pasture Grazing Unrestricted Cattle Access
TN06010108 043 - 0300	Sartain Creek	Jefferson	4.40	Pasture Grazing Unrestricted Cattle Access
TN06010108 043 - 0310	Carter Branch	Jefferson Hamblen	3.50	Pasture Grazing Unrestricted Cattle Access
TN06010201 013 – 1000	Pond Creek	Loudon Monroe	13.57	Pasture Grazing Unrestricted Cattle Access
TN06010201 013 – 2000	Pond Creek	Loudon Monroe	4.18	Pasture Grazing Unrestricted Cattle Access
TN06010201 028 – 1000	Crooked Creek	Blount	13.91	Pasture Grazing Unrestricted Cattle Access
TN06010201 1015 – 1000	Cloyd Creek	Loudon	11.30	Pasture Grazing Unrestricted Cattle Access
TN06030004 043 – 0300	Corn Creek	Marshall	4.00	Pasture Grazing Unrestricted Cattle Access
TN06010102 042 – 0200	Back Creek	Sullivan	14.1	Pasture Grazing Unrestricted Cattle Access Channelization
TN06020001 029 – 0200	Unnamed Trib To Savannah Creek	Hamilton	1.50	Pasture Grazing Upstream Impoundment
TN05110002 009 – 0200	Unnamed Trib To Middle Fork Drakes Creek	Sumner	3.70	Petroleum/Natural Gas Activities
TN05130202 220 – 0300	Slaters Creek	Sumner	11.30	Sand/Gravel/Rock Quarry Bank Modification
TN06010107 010 - 3000	West Prong Little Pigeon River	Sevier	5.40	Septic Tanks
TN05130104 048 - 0300	Litton Fork Pine Creek	Scott	2.50	Septic Tanks
TN05130104 048 - 0400	East Fork Pine Creek	Scott	2.80	Septic Tanks
TN05130104 048 - 0410	Unnamed Trib To East Fork Pine Creek	Scott	2.40	Septic Tanks
TN05130104 048 - 0500	South Fork Pine Creek	Scott	1.7	Septic Tanks
TN06020001 087 – 1000	Shoal Creek	Hamilton	5.40	Septic Tanks
TN06020001 109 – 0300	Short Creek	Hamilton	2.50	Septic Tanks
TN06020001 109 – 0400	Bee Branch	Hamilton	1.55	Septic Tanks
TN05130101 016 – 0200	Davis Creek	Campbell	20.53	Septic Tanks

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN05130104 048 – 0200	North Fork Pine Creek	Scott	1.50	Septic Tanks
TN06010105 003 – 1100	Johns Creek	Cocke	1.45	Septic Tanks
TN06010105 003 – 1110	Baker Creek	Cocke	4.40	Septic Tanks
TN06010107 007 – 2000	Little Pigeon River	Sevier	2.40	Septic Tanks
TN06010107 010 - 0100	Gnatty Branch	Sevier	1.80	Septic Tanks
TN06010107 010 - 0200	King Branch	Sevier	2.50	Septic Tanks
TN06010107 010 – 0300	Beech Branch	Sevier	2.04	Septic Tanks
TN06010107 010 – 1900	Walden Creek	Sevier	2.60	Septic Tanks
TN06010204 044 – 1300	Sinkhole Creek	Monroe	13.66	Septic Tanks
TN06010206 007 – 0100	Little Creek	Claiborne	9.40	Septic Tanks
TN06010207 029 – 2000	Coal Creek	Anderson	15.00	Septic Tanks
TN06030001 055T - 0100	Graham Branch	Marion	4.89	Septic Tanks
TN06030001 057 - 0922	Clouse Hill Branch	Grundy	1.87	Septic Tanks
TN06010107 010 - 1000	West Prong Little Pigeon River	Sevier	8.10	Septic Tanks Channelization
TN06010107 010 - 2000	West Prong Little Pigeon River	Sevier	5.70	Septic Tanks
TN05130104 048 - 3000	Pine Creek	Scott	3.00	Septic Tanks Channelization
TN05130104 048 - 2000	Pine Creek	Scott	4.1	Septic Tanks Channelization
TN05130101 016 – 2000	Hickory Creek	Campbell	9.50	Septic Tanks Pasture Grazing
TN06010107 010 – 1910	Cove Creek	Sevier	8.50	Septic Tanks Pasture Grazing
TN06030001 057 – 0140	Beene Cove Creek	Marion	1.84	Silviculture
TN08010204 014 - 0500	Cane Creek	Henderson	17.80	Silviculture
TN05130107 012 – 0200	Fultz Creek	Warren	14.4	Silviculture
TN06020004 009 – 0510	Unnamed Trib To Glady Fork	Sequatchie	0.55	Silviculture Harvesting
TN06030004 029_0410	Unnamed Trib To Wet Weakley Creek	Lawrence	0.75	Silviculture Harvesting Animal Feeding Operations
TN05130101 015 – 2000	Clear Fork	Claiborne Campbell	9.65	Sources in Other State Septic Tanks
TN05130107 002 – 1000	Mountain Creek	Warren Cannon	6.92	Specialty Crop Production
TN05130107 016 – 0740	Laurel Creek	Grundy	3.93	Specialty Crop Production
TN06020001 048 – 0200	Polebridge Creek	Rhea Bledsoe	14.90	Specialty Crop Production
TN08010211 00720– 0300	Unnamed Trib To Nonconnah Creek	Shelby	3.09	Specialty Crop Production

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN05130107 004 – 0100	Hickory Grove Branch	Warren	10.99	Specialty Crop Production Pasture Grazing
TN06010201 066 – 0500	Mccall Branch	Knox	1.73	Streambank Modification
TN06010201 080 – 0100	Whites Creek	Knox	10.20	Streambank Modification
TN06010103 008 – 0800	Gap Branch	Carter	15.93	Streambank Modification Septic Tanks
TN08010205 012 – 0700	Bond Creek	Madison	9.7	Streambank Modifications
TN06010201 028 – 0100	Spicewood Branch	Blount	2.23	Streambank Modifications
TN08010208 034 - 0100	Old Channel Of Nelson Creek	Lauderdale	0.76	Undetermined Pathogen Source
TN05130105 033 – 1400	Town Branch	Pickett	3.10	Undetermined Source
TN06010207 026 – 0600	Bear Creek	Roane Anderson	10.87	Undetermined Source
TN05130202 007 – 0800	Indian Creek	Davidson	5.70	Undetermined Source
TN05130202 007 – 1100	Holt Creek	Davidson Williamson	6.20	Undetermined Source
TN05130104 010 – 1000	Rock Creek	Anderson	17.40	Undetermined Source
TN05130106 008-1000	Blackburn Fork	Jackson	15.9	Undetermined Source
TN05130202 007 – 0930	Unnamed Trib To Owl Creek	Williamson	2.60	Undetermined Source
TN05130202 220 – 0100	Lumsley Fork	Davidson	4.70	Undetermined Source
TN05130202 220 – 0200	Walkers Creek	Davidson	6.49	Undetermined Source
TN05130203 022 –0100	Town Creek(Formerly Unnamed Trib To Lytle Creek)	Rutherford	0.13	Undetermined Source
TN05130204 002 –1300	Town Creek	Dickson	7.60	Undetermined Source
TN05130204 006 –0300	Unnamed Trib To Big Turnbull Creek	Williamson	0.36	Undetermined Source
TN05130204 006 –0400	Unnamed Trib To Big Turnbull Creek	Williamson	0.59	Undetermined Source
TN05130205 038 - 0100	Little Mcadoo Creek	Montgomery	14.80	Undetermined Source
TN05130205 1735 - 1000	Wells Creek	Houston	9.90	Undetermined Source
TN06010107 007 - 0700	Buck Fork	Sevier	3.80	Undetermined Source
TN06010107 007 - 1120	Shutts Prong	Sevier	4.79	Undetermined Source
TN06010107 010 - 1100	Road Prong	Sevier	4.60	Undetermined Source
TN06010201 032 - 0510	Goshen Prong	Sevier	6.66	Undetermined Source
TN06010201 032 - 0530	Unnamed Trib. To Fish Camp Prong	Sevier	1.34	Undetermined Source
TN06010201 032 – 0700	Dry Branch	Blount	3.31	Undetermined Source
TN06010201 032 – 0800	Short Creek	Blount	10.70	Undetermined Source

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN06020001 048 – 0100	Morgan Creek	Rhea	12.80	Undetermined Source
TN06020001 497 - 1000	Unnamed Trib. To Chickamauga Reservoir	Hamilton	3.50	Undetermined Source
TN06020002 005 - 1400	Unnamed Trib To Candies Creek	Bradley	1.14	Undetermined Source
TN06020002 018 – 0300	Siccowee Branch	Polk	3.23	Undetermined Source
TN08010207 003 - 0100	Colonel Creek	Hardeman	8.82	Undetermined Source
TN08010208 033 - 1000	Lagoon Creek	Lauderdale Haywood	19.3	Undetermined Source
TN08010209 008 – 1000	Treadville Bottom	Fayette	32.16	Undetermined Source
TN08010209 021 – 4000	Big Creek	Tipton	35.1	Undetermined Source
TN08010208 896 - 1000	Town Creek	Tipton	11.3	Undetermined Source Nonirrigated Crop Production Channelization
TN06030003 053 – 0100	Blue Creek	Franklin Coffee	10.90	Undetermined Source Pasture Grazing
TN08010210 021 - 1000	Shaws Creek	Fayette	20.1	Undetermined Source Pasture Grazing
TN05130206 034 - 0300	Noahs Spring Branch	Montgomery	2.80	Undetermined Source Source in Other State
TN05130206 019 - 0321	Frey Branch	Robertson	7.20	Unrestricted Cattle Access
TN06040002 033 - 0300	Bell Buckle Creek	Bedford	11.10	Unrestricted Cattle Access
TN05130201 021-0300	Neal Branch	Wilson	3.7	Unrestricted Cattle Access
TN05130202 007 – 5000	Mill Creek	Davidson Williamson	8.10	Unrestricted Cattle Access
TN06010104 011 - 0600	Bradley Creek	Hawkins	9.2	Unrestricted Cattle Access
TN06010104 011 - 1900	Hunt Creek	Hawkins	7.7	Unrestricted Cattle Access
TN06010108 007 - 0100	Little Meadow Creek	Greene Cocke	16.91	Unrestricted Cattle Access
TN06010108 007 - 1000	Meadow Creek	Greene Cocke	23.40	Unrestricted Cattle Access
TN06040001 1163 – 0110	Unnamed Trib To Little Beech Cr.	Wayne	5.60	Unrestricted Cattle Access
TN06040002 002 – 3000	Fountain Creek	Maury	7.90	Unrestricted Cattle Access
TN06040002 033 - 0600	Muse Creek	Bedford	3.00	Unrestricted Cattle Access
TN06040002 047 - 0300	Lick Creek	Marshall Rutherford	8.80	Unrestricted Cattle Access
TN06040002 047 – 1000	Spring Creek	Marshall Rutherford	13.20	Unrestricted Cattle Access

Waterbody ID	Impacted WB	County	Miles Impaired	Pollutant Source
TN05130108 036 – 0700	Unnamed Trib To Caney Fork River	Cumberland	3.50	Unrestricted Cattle Access Pasture Grazing
TN06040001 651 – 1000	Goodin Branch	Decatur	2.87	Upstream Impoundment
TN06040001 802 – 1600	Brown'S Creek	Henderson	5.20	Upstream Impoundment
TN06040001 802 – 1650	Brown'S Creek	Henderson	0.30	Upstream Impoundment
TN08010202 036 - 0160	Taylor Creek	Obion	10.50	Upstream Impoundment Channelization
TN08010210 022 - 0350	Marys Creek	Shelby Fayette	2.5	Upstream Impoundment Pasture Grazing
TN08010208 001 -1150	Cub Creek	Hardeman	9.12	Upstream Impoundment Pasture Grazing Channelization
TN06030001 057 - 0925	Little Fiery Gizzard Creek	Grundy	2.32	Upstream Impoundment Pasture Grazing Septic Tanks
TN08010202 009 - 1700	Spring Hill Creek	Henry	11.60	Upstream Impoundment Removal of Riparian Vegetation
TN06030001 057 – 0611	Unnamed Trib To Laurel Lake	Marion	0.50	Waste Storage/Tank Leaks
TN06010205 016 - 1000	Clinch River	Hancock	16.88	Threatened by loss of native mussel species.
TOTAL IMPAIRED STREAM MILES			**10821.17**	

Appendix F

Total Score _____ **Rank** _____

Funded _____

TENNESSEE DEPARTMENT OF AGRICULTURE

Water Resources

319 Grant Proposal Evaluation Criteria - BASE

PROJECT NAME: _____

Section I – All proposed projects must provide sufficient information to answer the following questions regarding each project. If the answer to any of the following questions is "NO" then the project is not eligible for further consideration in Section II, and will not be formally ranked for funding allocation.

A. Is the project eligible for 319 funding?

_____Yes _____No _____

B. State Nonpoint Guidelines - the project addresses one or more of the goals identified in the Tennessee Nonpoint Source "Management Program Document"?

_____Yes _____No

C. Project Target – the project is precisely aimed at training a particular group, providing a specific educational message, or establishing a demonstration site for the purpose of training and educating others in nonpoint source issues?

_____Yes _____No

D. Project Work Plan – the work plan provides sufficient, detailed documentation of the proposed project, including: list of cooperating organizations, description of project, overall objectives, specific milestones, measures of success, anticipated schedule for accomplishing milestones, and a budget?

_____Yes _____No

E. Financial Commitment – matching funds (normally 40%) are provided, and the budget includes the source(s) of all matching funds?

_____Yes _____No

Forward Proposal to Section II for Final Project Scoring _____ **Yes** _____ **No**

Section II – Only projects that have satisfactorily met Section I requirements may continue for ranking consideration under this section. Total points earned in this section will determine a project's overall ranking, and ranking will be the primary basis for funding allocation. No project is guaranteed to receive 100% of requested funds, regardless of score or rank.

_____ **1.** Percent of 319 budget for total personnel costs [defined as total amount of money allocated for salaries and benefits of employees of the grantee **and** the total amount allocated for payment through subcontracts for technical assistance(i.e., not to include cost for time to deliver the program)]:

- >75% ----- 0 points
- 50-74% --- 2 points
- 25-49% --- 5 points
- <25% ----- 10 points

_____ **2.** Primary goal of project:

- provide training in an area of nonpoint source pollution prevention or mitigation through a statewide or local training project ---------- 14-20 points
- increase public awareness of nonpoint source pollution issues through a statewide or local educational initiative ---------- 10-18 points
- establish demonstration site(s) of new and innovative strategies to prevent nonpoint source pollution ---------- 0-12 points

_____ **3.** Number of other agencies providing matching funds (including "in-kind") for this project other than the submitting organization.

- 0 ----- 0 points
- 1-2 ---- 2 points
- 3-5 ---- 5 points
- >5 ----- 10 points

_____ **4.** 319 funds as a percentage of the overall budget for this project.

- 60% or > ------ 0 points
- 45 - 59% ------ 2 points
- 35 - 44% ------ 4 points
- 25 - 34% ------ 6 points
- < 25% ---------- 10 points

_____ **5.** Does this grantee currently have any other active 319 grants?

- No -------- 0 points
- Yes -------- 0 to -5 points

_____ **6.** Is this a continuation of a previous project (319, ARCF, NRCS, FSA, etc)?

- Yes ----- 1-5 points
- No ------- 0 points

_____ **7.** Are there dedicated funds from other agencies that would better address this project?

- Yes ----- 0 points
- No ------ 5 points

_____ **8.** Demonstrated need for the planned training/education activities:

- 0 – 10 points

_____ **9.** Likelihood of this project resulting in real, positive improvement in actual water quality parameters in the future:

- 0 – 10 points

Total Points Earned _____

Total Score _____ **Rank** _____

Funded _____

TENNESSEE DEPARTMENT OF AGRICULTURE
Water Resources

319 Grant Proposal Evaluation Criteria - INCREMENTAL

PROJECT NAME: _____

Section I – All proposed projects must provide sufficient information to answer the following questions regarding each project. If the answer to any of the following questions is "NO" then the project is not eligible for further consideration in Section II, and will not be formally ranked for funding allocation.

A. Is the project eligible for 319 funding?

_____Yes _____No _____

B. State Nonpoint Guidelines - the project addresses one or more of the goals identified in the Tennessee Nonpoint Source "Management Program Document"?

_____Yes _____No

C. Project Target – the project is precisely aimed at preventing or mitigating pollutant loadings from nonpoint sources within a specific watershed(s) with the ultimate goal of removing a 303(d)-listed waterbody or preventing one from becoming listed? (i.e., this should not be a "demonstration project")

_____Yes _____No

D. Project Work Plan – the work plan provides sufficient, detailed documentation of the proposed project, including: list of cooperating organizations, description of project, overall objectives, specific milestones, measures of success, anticipated schedule for accomplishing milestones, and a budget?

_____Yes _____No

E. Financial Commitment – matching funds (normally 40%) are provided, and the budget includes the source(s) of all matching funds?

_____Yes _____No

F. Watershed Plan Status – a plan has already been approved or is currently under review?

_____Yes _____No

Forward Proposal to Section II for Final Project Scoring _____ **Yes** _____ **No**

Section II – Only projects that have satisfactorily met Section I requirements may continue for ranking consideration under this section. Total points earned in this section will determine a project's overall ranking, and ranking will be the primary basis for funding allocation. No project is guaranteed to receive 100% of requested funds, regardless of score or rank.

_____ **1.** Percent of 319 budget for personnel costs [defined as total amount of money allocated for salaries and benefits of employees of the grantee **and** the total amount allocated for payment through subcontracts for technical assistance(i.e., not to include cost of labor for BMP implementation)]:

:

- >75% ----- 0 points
- 50-74% --- 2 points
- 25-49% --- 5 points
- <25% ----- 10 points

_____ **2.** Percent of budget for BMP implementation:

- >75% ----- 10 points
- 50-74% --- 5 points
- 25-49% --- 2 point
- <25% ----- 0 points

_____ **3.** Primary goal of project:

- **restore** 303(d) listed waterbody via BMP implementation --------- 8 - 20 points
- **prevent** degradation of bodies of water that are not yet 303(d) listed via BMP implementation ---------- 0 - 15 points

_____ **4.** Number of other agencies providing matching funds (including "in-kind") for this project other than the submitting organization?

- 0 ------- 0 points
- 1-2 ---- 2 points
- 3-5 ---- 5 points
- >5 ----- 10 points

_____ **5.** 319 funds as a percentage of the overall budget of the project.

- 60% or > ------ 0 points
- 45 – 59% ------ 2 points
- 35 – 44% ------ 4 points
- 25 – 34% ------ 6 points
- < 25% ---------- 10 points

_____ **6.** Does this grantee currently have any other active 319 grants?

- No -------- 0 points
- Yes ------- 0 to -5 points

_____ **7.** Is this a continuation of a previous project (319, ARCF, NRCS, FSA, etc)?

- Yes ----- 1-5 points
- No ------- 0 points

_____ **8.** How well do the planned BMPs address the sources (303(d) list) of the causes of pollution ?

- Precisely ---------- 9-10 points
- Somewhat -------- 2-8 points
- No ---------- 0 points

_____ **9.** Are there dedicated funds from other agencies that would better address this project?

- Yes ----- 0 points
- No ------ 5 points

_____ **10.** Demonstrate probability of achieving measurable water quality improvements ------- 0-10 points
(The proposal must provide evidence that the project will meet the objectives as stated in the work plan. This evidence will vary with each project, but typically might include things such as letters of commitment from local landowners, statements indicating prior experience with similar projects, etc...)

_____ **11.** Score from appropriate TDA Watershed Coordinator –---------- 0 - 10 points

_____ **12.** Score from appropriate TDEC-WPC Environmental Field Office manager –---------- 0 – 10 points

Total Points Earned _____

Appendix G

Tennessee Department of Agriculture
Division of Administration and Grants
Water Resources Program

FY 2014 Sub-Recipient Monitoring Plan

Purpose: This document is written to comply with the rules, regulations and policies set forth in Tennessee Department of General Services, Central Procurement Office, Policy 2013-007, the *Tennessee Sub-Recipient Monitoring Manual*, and all applicable circulars from the Office of Management and Budget.

Date of Plan: October 1, 2013 **Term of Plan:** July 1, 2013- June 30, 2014

Program Name: Water Resources Grant Programs

Completed By: John McClurkan

Program Contact Information

John McClurkan, Water Resources Program Administrator
Ellington Agricultural Center
P.O. Box 40627
Nashville, TN 37204
Voice: 615-837-5305
Fax: 615-837-5225
Email: John.McClurkan@tn.gov

319(h) Nonpoint Source Program (NPS)

Program Contact:
Sam Marshall, 319 Program Manager
Ellington Agricultural Center
P.O. Box 40627
Nashville, TN 37204
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Fiscal Contact:
Susan Primm, Grants Analyst
Ellington Agricultural Center
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Nashville, TN 37204
Voice: 615-837-5491
Fax: 615-837-5225
Email: Susan.Primm@tn.gov

Agricultural Resources Conservation Fund Program (ARCF)

Program Contact:
John McClurkan
Ellington Agricultural Center
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Nashville, TN 37204
Voice: 615-837-5305
Fax: 615-837-5225
Email: John.McClurkan@tn.gov

Fiscal Contact:
Kay McBride, Accounting Technician
Ellington Agricultural Center
P.O. Box 40627
Nashville, TN 37204
Voice: 615-837-5036
Fax: 615-837-5225
Email: Katherine.E.McBride@tn.gov

1. Total Sub-Recipient Population

Attachment 1 lists all active sub-recipients within the NPS Program, including vendor number, contract number, project name, risk assignment and current year maximum liability. **Attachment 1A** lists all sub-recipients within the 319(h) Nonpoint Source Grant Program that will be monitored in FY 2014. **Attachment 2** lists all active sub-recipients within the ARCF Program, including vendor number, contract number, project name, risk assignment and current year maximum liability. **Attachment 2A** lists all sub-recipients within the ARCF Program that will be monitored in FY 2014.

2. Sub Recipients to be Monitored

319 Nonpoint Source Program.
TDA will attempt to adopt, consistent with F&A Policy 22, the "1/3-2/3" approach, whereby a minimum of 1/3 off all active sub recipient contracts will be monitored each fiscal year, and 2/3 of the total value of the aggregate current year maximum liability amount for the total sub recipient population. The WR Program desires to monitor all sub-recipients a minimum of once every three years. We feel this is important due to the ongoing nature of the awards to the sub-recipients through our program.

ARCF
TDA will attempt to adopt, consistent with F&A Policy 22, the "1/3-2/3" approach, whereby a minimum of 1/3 off all active sub recipient contracts will be monitored each fiscal year, and 2/3 of the total value of the aggregate current year maximum liability amount for the total sub recipient population. The WR Program desires to monitor all sub-recipients a minimum of once every three years. We feel this is important due to the ongoing nature of the awards to the sub-recipients through our program.

3. Monitoring Cycle
The monitoring cycle will be the state fiscal year, July-June.

4. Monitoring Guide
TDA monitoring staff will utilize the monitoring guide in the *Tennessee Sub-Recipient Contract Monitoring Manual*, June 2004, Attachment B, pages 27-41.

5. Monitoring Staff
One Auditor II position is assigned to the department's Grants and Contracts Office. In addition to the 319(h) and ARCF monitoring activity, this position will be assigned field work for a USDA-funded program of TDA. For FY14, it is estimated that the staff time devoted to Water Resources Program monitoring will be .25 full-time equivalents.

6. Program Description

NPS Program

The Tennessee Department of Agriculture administers the NPS Program in Tennessee on behalf of US-EPA. This program provides funds to states, territories and Indian tribes for installing Best Management Practices (BMPs) to stop NPS pollution; providing training, education, and demonstrations; and monitoring water quality. The NPS Program is non-regulatory, promoting voluntary, incentive-based solutions. It primarily funds three types of

programs. BMP Implementation Projects improve an impaired waterbody, or prevent a non-impaired water from becoming placed on the 303(d) List. Projects of this type receive highest priority for funding. All projects involving BMPs must be based on an approved "Watershed Based Plan". Up to 20% of the available grant funds assist water quality monitoring efforts in Tennessee streams, both in the state's 5-year watershed monitoring program, and also in performing before-and-after BMP installation, so that water quality improvements can be verified. Educational Projects funded through TDA-NPS raise public awareness of practical steps that can be taken to eliminate NPS pollution.

ARCF

The ARCF provides cost-share assistance to Tennessee landowners to install Best Management Practices (BMPs) that reduce agricultural water pollution through a reduction in soil loss. This assistance is facilitated primarily through Soil Conservation Districts although Resource Conservation and Development Councils, universities, and other agricultural associations may participate. A wide range of BMPs are available for cost-share, from those that curtail soil erosion to ones that help to remove pollutants from water runoff from agricultural operations. Landowners may be eligible to receive up to 75% of the cost of a BMP installation. Part of the fund is available for educational projects which raise awareness of soil erosion/water quality problems and promote BMP use.

7/8. Risk Assessment/Criteria Used to Assign Risk

All risk assessments will take into account the eighteen key factors outlined in the *Tennessee Sub-Recipient Contract Monitoring Manual*, June 2004. Initially, all sub-recipients will be assigned a low risk level, unless noted. This will be evaluated annually and adjusted where needed as monitoring activities commence and issues arise.

9. Summary of Findings

Subsequent years monitoring plans will include findings identified by TDA through the monitoring process, and will be used to refine the contracting process.

10. Corrective Action Process

Consistent with F&A Policy 22, all subsequent monitoring plans will summarize actions taken in the previous year to address findings from sub-recipient monitoring. If deficiencies are disclosed, the respective program manager will submit a report of the review findings to the sub-recipient and ensure that corrective action is taken. Assistance will be provided to the sub-recipient in developing an acceptable corrective action plan. After review and within 10 days of receipt of such plan, the program manager will respond to the sub-recipient with approval or recommendations for further action.

Appendix H

Helpful Websites

For more information about the 319 Program,
applicable rules and regulations, and current projects

Tennessee Department of Agriculture, Nonpoint Source Program, EPA Section 319:
http://www.tn.gov/agriculture/water/nps.shtml

Environmental Protection Agency, Clean Water Act Section 319:
http://water.epa.gov/polwaste/nps/cwact.cfm

Environmental Protection Agency,Grants Reporting and Tracking Systems – GRTS:
http://iaspub.epa.gov/apex/grts/f?p=GRTS:199

Natural Resources Conservation Service Programs for Environmental Planning:
http://www.extension.org/pages/8966/nrcs-programs-for-environmental-planning#.U5n_zZRdXww

Natural Resources Conservation Service National Conservation Practice Standards:
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/references/?cid=nrcsdev11_001020

Tennessee Department of Agriculture, Agricultural Resources Conservation Fund:
http://www.tn.gov/agriculture/water/arcf.shtml

Tennessee Department of Environment and Conservation, Tennessee's Total Maximum Daily Load (TMDL) Program:
http://www.tn.gov/environment/water/water-quality_total-daily-maximum-loads.shtml

Tennessee Department of Environment and Conservation, Water Quality Reports and Publications (including the 303(d) and 305(b) Reports):
http://www.tn.gov/environment/water/water-quality_publications.shtml

Title 40 Protection of Environment, Code of Federal Regulations:
http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40tab_02.tpl

The White House, Office of Management and Budget Circulars:
http://www.whitehouse.gov/omb/circulars_default

Tennessee Department of Agriculture - Division of Forestry:
http://www.tn.gov/agriculture/forestry/index.shtml

Tennessee State Forests:
http://www.tn.gov/agriculture/forestry/stateforests.shtml

State Soil Conservation Committee:
http://www.tn.gov/agriculture/water/sscc.shtml

EPA Assistance Administration Manual 5700, Part 2, Section 01, *Subawards Under EPA Assistance Agreements:*
http://www.epa.gov/ogd/guide/subaward-policy-part-2.pdf

Grants Policy Issuance 12-06, *Timely Obligation, Award, and Expenditure of EPA Grant Funds:*
http://www.epa.gov/ogd/grants/final_gpi_12_06_streamlining_state_grant_and_expediting_outlays.pdf

Grants Policy Issuance 11-01, *Managing Unliquidated Obligations and Ensuring Progress under EPA Assistance Agreements:*
http://www.epa.gov/ogd/forms/gpi_11_01_12_07_10.pdf

Appendix I

APPLICATION AND AGREEMENT FOR COST-SHARE ASSISTANCE
between

TDA 319 Nonpoint Source Grantee			and
Name of Cooperator (please print)		Date of Application	
Mailing Address		Daytime Phone /Email Address	
City, State, Zip Code		Farm/ Tract Number or Physical Location of Project Site	

Terms of Agreement

1. The Tennessee Department of Agriculture (TDA) provides funds through the 319 Nonpoint Source Grant Program to the Grantee for cost-sharing with cooperators on a reimbursement basis to establish Best Management Practices (BMPs) for the control of nonpoint source pollution and improvement of water quality.
2. The Maximum Cost Share Amount offered by the Grantee through this Agreement is indicated in Item 8 below. There is no guarantee of additional cost-share assistance to cover unforeseen conditions which may arise and are not accounted for in the BMP cost estimate. For most BMPs, cost estimates are calculated using the USDA-NRCS State Average Cost List applicable at the time of application for the location of the BMP. In order to establish a baseline design standard, BMPs will generally conform to NRCS Field Office Technical Guide and the Guidelines of the TDA Agricultural Resources Conservation Fund. All septic work must be approved by TDEC and maximum cost share amounts determined through competitive bids.
3. Upon completion, approved BMPs will normally be reimbursed at 60 - 75% of the actual cost of establishing the BMP, or up to 85% of the actual cost of BMPs in impaired watersheds, or the Maximum Cost Share Amount, whichever is less. However, if there is cost-share from another source the total amount of all cost-share shall not exceed 90% of the Total Estimated Cost. The Grantee may elect to cost-share at a lesser percentage, or to use another payment system such as flat rate per cooperator per year.
4. I agree to maintain each BMP for its normal life expectancy as set forth in the US Department of Agriculture NRCS Field Office Technical Guide, if applicable. All septic work must be maintained for a minimum of 10 years. If I sell the land or if the land should pass to my heirs before the end of the normal life expectancy of the BMP(s), I agree that the maintenance of the BMP(s) will be made a condition of the sale or transfer by securing the agreement of the new owners to the terms of this Agreement. I agree that I or my estate shall reimburse TDA a pro-rated amount for any shortened life of any practice.
5. If I accept cost-share assistance from the Grantee, I agree that neither the Grantee nor I will be liable for any damage to the other's property or personal injury resulting from the implementation of the BMPs listed below.
6. I agree that the Commissioner of TDA or his designee; or if applicable, the NRCS State Conservationist or his designee; or the Grantee or their employees may periodically enter my property for the purpose of determining compliance with this Agreement.
7. Based on the above, I hereby request prior approval of cost-share for the following BMP(s):

BMP Name	Quantity/ Dimension*	Location/ Field No.	Life Expectancy, years	Cooperator's Initials

*Please list the number of each type of BMP to be installed and the estimated length or area covered by the practice, as applicable.

8. Total Estimated Cost	Maximum Cost-Share Amount	Agreed Upon Reimbursement Rate	Cooperator's Initials
		_____%	

I hereby agree to the Terms of Agreement listed above.

Signature of Cooperator _____ Date _____

This application is approved for cost-share assistance based on the terms agreed to above.

Technical Representative for Grantee _____ Date _____

TDA Watershed Coordinator _____ Date _____

Signature below indicates that the Grantee agrees to reimburse the Cooperator at an amount not to exceed the Maximum Cost-Share amount given above only after the BMPs listed above have been implemented.

Financial Representative of Grantee _____ Date _____

Appendix J

Draft 319 Program Management Survey for Stakeholders

319 Program Management Survey

Introduction

The Tennessee Department of Agriculture (TDA) is in the process of reviewing and updating the 319 Program Management Document. As part of this process, we'd like to hear from you - our partners - on what you think we are doing well, and where there is room for improvement. Thank you for participating in our survey. Your feedback is important.

1. What do you think should be the most important long term goal for the 319 program? Please rank these in order of importance.

- ▾ Restore impaired water bodies (i.e. those on the 303(d) list) by implementing best management practices (BMPs) that address nonpoint source pollution.
- ▾ Protect unimpaired/high quality waters (i.e. those not on the 303(d) list, but designated as Exceptional Tennessee Waters or National Outstanding Resource Waters) by implementing appropriate BMPs.
- ▾ Build capacity for future projects in local watersheds by engage stakeholders through public education, awareness, and action.
- ▾ Build awareness of problems and solutions related to nonpoint source pollutionthrough statewide education efforts targeting various audiences.
- ▾ Track interim progress towards full restoration of impaired water bodies.

2. What other long term goals (i.e. five year goals) would you like to see the 319 program address?

Next

319 Program Management Survey

Short Term Goals

3. As we seek to achieve the long term goals above, on what short term goal (1 - 2 years) would you like to see the 319 program focus?

Prev Next

319 Program Management Survey

Proposal Submittal, Review, and Awards

4. Are you satisfied with the current 319 grant proposal submittal and review process?

- ○ Yes
- ○ No

If no, please explain:

5. Is the current proposal submittal schedule convenient? (Typically, the Request for Proposals is posted in September, and the deadline to apply is December 1st.)

- ○ Yes
- ○ No

If no, please explain:

6. Would it benefit your organization to be provided with the proposal evaluation scoresheet before submitting your proposal?

- ○ Yes
- ○ No

7. Would it benefit your organization to receive specific feedback regarding award decisions if your proposal was not funded?

- ○ Yes
- ○ No

Prev Next

319 Program Management Survey

Communication and Outreach

8. Are you satisified with the quantity and quality of communication and contact you receive from the TDA-Nonpoint Source Program?

- ◯ Yes
- ◯ No

If no, please explain:

9. Which of the following technical services would be most useful to your organization, if offered by the TDA-Nonpoint Source Program?

- ◯ Mapping/GIS
- ◯ Modeling/Load Reduction Estimates
- ◯ Watershed-based Plan Development
- ◯ Best Management Practice (BMP) Design
- ◯ Outreach/Education Support
- ◯ Other (please specify):

Prev Next

319 Program Management Survey

10. Historically, the TDA-Nonpoint Source Program has not designated "priority" watersheds to be given special consideration for grant funding. Instead, the TDA-Nonpoint Source Program has elected to accept grant proposals from all watersheds (statewide), and to consider them equally. An alternative approach, taken in many states, is for the Nonpoint Source Program to select a handful of "priority" watersheds and either 1.) limit the proposals accepted to only those watersheds or 2.) give a higher a higher ranking/consideration to proposals received from the chosen watersheds. How do you feel about these two approaches?

- ( ) I prefer the approach where there are no pre-determined "priority" watersheds, proposals can be submitted for any watershed, and all proposals are considered equally.
- ( ) I prefer the approach where certain watersheds are made the "priority" by the Nonpoint Source Program, in which proposals can only come from those watersheds, or those proposals are given higher weight during evaluation.

Whichever answer you chose above, it would be most helpful if you would provide some information as to why you answered as you did.

[ ]

Prev Done

Appendix K

UNITED STATES DEPARTMENT OF AGRICULTURE

MEMORANDUM OF UNDERSTANDING

NRCS CONSERVATION COOPERATOR

CERTIFYING USDA AGENCY: NATURAL RESOURCES CONSERVATION SERVICE

Purpose

This NRCS Conservation Cooperator Memorandum of Understanding is being issued by the Natural Resources Conservation Service to establish that the Tennessee Department of Agriculture hereafter, "TDA", has been certified by NRCS to be qualified and authorized to provide certain conservation related services (e.g., services that sustain agricultural productivity, improve environmental quality, reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters) or to monitor, assess, or evaluate conservation benefits from CRP and other USDA conservation programs. Those individuals or organizations (governmental or non-governmental) certified by NRCS as providing conservation related services or monitoring, assessing, or evaluating conservation benefits are known as NRCS Conservation Cooperators.

NRCS Conservation Cooperator

As a certified NRCS Conservation Cooperator, TDA is authorized access to otherwise protected agricultural information. Protected information approved for disclosure under this Memorandum of Understanding shall be strictly limited to only that information necessary for TDA to perform monitoring, assessing, or evaluating of conservation benefits. Disclosure to TDA can include receiving the protected information either 1) directly from NRCS) receiving the protected information directly from the producer or owner as part of the process required to enable a producer or owner to participate in a USDA program.

NRCS Conservation Cooperator Use of the Protected Information

TDA has provided information to NRCS indicating that the protected information shall be used to assess the impact of all federally-funded or state-funded conservation practice implementation on waters listed as impaired on the 303(d) List, and document the level of effort by conservation practices where impaired waters are measurably improved and proposed to be delisted.

Responsibilities

NRCS agrees to:

Provide to TDA the protected information that has been approved for disclosure under this Memorandum of Understanding. The protected data types approved for disclosure are limited to:

- latitude/longitude coordinates of all conservation practice installations beginning in FFY 2005 and forward. The coordinates shall be transferred to TDA preferably in decimal degrees, in Excel spreadsheet format with State Plane NAD83 as the coordinate system.

TDA agrees that:

- Signature on this Memorandum of Understanding indicates acknowledgement and understanding that data types identified in this Memorandum of Understanding are protected from further disclosure by Section 1619 of the 2008 Farm Bill (see Exhibit 1). TDA shall not subsequently disclose the protected information to any individual or organization that is not directly covered by this Memorandum of Understanding. Any such subsequent disclosure of the protected information will be a violation of the Federal statute Section 1619. TDA may be held legally liable should subsequent disclosure of the protected information occur in violation of Section 1619.

- Signature on this Memorandum of Understanding legally binds TDA to comply with the provisions in Section 1619. When signature is made on behalf of an organization, signature also legally binds every owner, manager, supervisor, employee, contractor, agent, and representative of the organization to comply with the provisions in Section 1619.

- TDA shall use the protected information only to perform work that is directly connected to performing monitoring, assessing, or evaluating of conservation benefits. Use of the protected information to perform work that is not directly connected to performing monitoring, assessing, or evaluating of conservation benefits is expressly prohibited.

- When signature is made on behalf of an organization, TDA shall internally restrict access to the protected information to only those individuals within the organization that have a demonstrated need to know the protected information in order to perform monitoring, assessing, or evaluating of conservation benefits.

- The provisions in Section 1619 are continuing obligations. Even when TDA is no longer a NRCS Conservation Cooperator, or when individuals currently affiliated with the organization should leave the organization, every person having been provided access to the protected information shall continue to be legally bound to comply with the provisions in Section 1619.

- When signature is made on behalf of an organization, TDA shall notify all members of the organization about this Memorandum of Understanding. For the duration of this Memorandum of Understanding, notifications about the existence of this Memorandum of Understanding shall be made to those individuals that are new to the organization and periodic notifications shall be sent throughout the organization (and at a frequency not to exceed 180 calendar days) to remind all about the ongoing/continuing requirement to comply with this Memorandum of Understanding.

- This Memorandum of Understanding is non-transferable. The certification to obtain protected information may not be bought, sold, traded, assigned, extended to, or given free of charge to any other individual or organization not directly covered by this Memorandum of Understanding.

- TDA shall notify NRCS immediately when the organization is no longer, or within 30 calendar days notice of the date on which the organization will no longer be a NRCS Conservation Cooperator, whichever is sooner.

- Use of the protected information for any purpose is expressly prohibited when an individual/organization is no longer a NRCS Conservation Cooperator. When TDA is no longer a NRCS Conservation Cooperator, any protected information provided under this Memorandum of Understanding must be immediately destroyed. TDA shall provide to NRCS written certification that the protected information (paper and/or electronic copy) has been properly destroyed and/or removed from any electronic storage media.

- The State's "sunshine law", "open records act" and/or version of the Freedom of Information Act does not have a competing legal obligation that could potentially be used in an attempt to compel disclosure of the Section 1619 protected information identified in this Memorandum of Understanding.

Amendments

This Memorandum of Understanding may be amended at any time by mutual written agreement of the NRCS and TDA.

Termination

This Memorandum of Understanding may be terminated:

- Immediately by NRCS if it is confirmed or even suspected that TDA has committed a subsequent disclosure of the protected information in violation of Section 1619.

- Immediately by NRCS if it is confirmed that TDA is no longer a NRCS Conservation Cooperator working in cooperation with the Secretary of Agriculture by providing technical or financial assistance to USDA programs requiring access to data protected by Section 1619 of the 2008 Farm Bill.

- Immediately at the request of TDA upon identification that TDA no longer requires access to Section 1619 protected information and therefore requests that the NRCS Conservation Cooperator certification be rescinded.

- At any time by mutual written agreement of NRCS and TDA or independently by NRCS or TDA with 30 calendar days written notice to the other party.

Effective Period

This Memorandum of Understanding will be in effect on the date of the final signature and continues until July 31, 2013. Should the Memorandum of Understanding need to continue beyond the identified effective period, the entire Memorandum of Understanding must be

reviewed, updated if necessary, and revalidated prior to the expiration date of the identified effective period.

Signature of the NRCS Conservation Cooperator and the Date Signed

(Commissioner, Tennessee Department of Agriculture)

Executed this 14 day of MARCH, 2012

Signature of the Natural Resources Conservation Service Agency Certifying Official and the Date Signed

(Signature Block for the USDA Certifying Official)

Executed this 16 day of MARCH, 2012

SEC. 1619. INFORMATION GATHERING.

(a) GEOSPATIAL SYSTEMS.—The Secretary shall ensure that all the geospatial data of the agencies of the Department of Agriculture are portable and standardized.

(b) LIMITATION ON DISCLOSURES.—

(1) **DEFINITION OF AGRICULTURAL OPERATION.**—In this subsection, the term "agricultural operation" includes the production and marketing of agricultural commodities and livestock.

(2) **PROHIBITION.**—Except as provided in paragraphs (3) and (4), the Secretary, any officer or employee of the Department of Agriculture, or any contractor or cooperator of the Department, shall not disclose—

(A) information provided by an agricultural producer or owner of agricultural land concerning the agricultural operation, farming or conservation practices, or the land itself, in order to participate in programs of the Department; or

(B) geospatial information otherwise maintained by the Secretary about agricultural land or operations for which information described in subparagraph (A) is provided.

(3) **AUTHORIZED DISCLOSURES.**—

(A) LIMITED RELEASE OF INFORMATION.—If the Secretary determines that the information described in paragraph (2) will not be subsequently disclosed except in accordance with paragraph (4), the Secretary may release or disclose the information to a person or Federal, State, local, or tribal agency working in cooperation with the Secretary in any Department program—

(i) when providing technical or financial assistance with respect to the agricultural operation, agricultural land, or farming or conservation practices; or

(ii) when responding to a disease or pest threat to agricultural operations, if the Secretary determines that a threat to agricultural operations exists and the disclosure of information to a person or cooperating government entity is necessary to assist the Secretary in responding to the disease or pest threat as authorized by law.

(4) **EXCEPTIONS.**—Nothing in this subsection affects—

(A) the disclosure of payment information (including payment information and the names and addresses of recipients of payments) under any Department program that is otherwise authorized by law;

(B) the disclosure of information described in paragraph (2) if the information has been transformed into a statistical or aggregate form without naming any—

(i) individual owner, operator, or producer; or

(ii) specific data gathering site; or

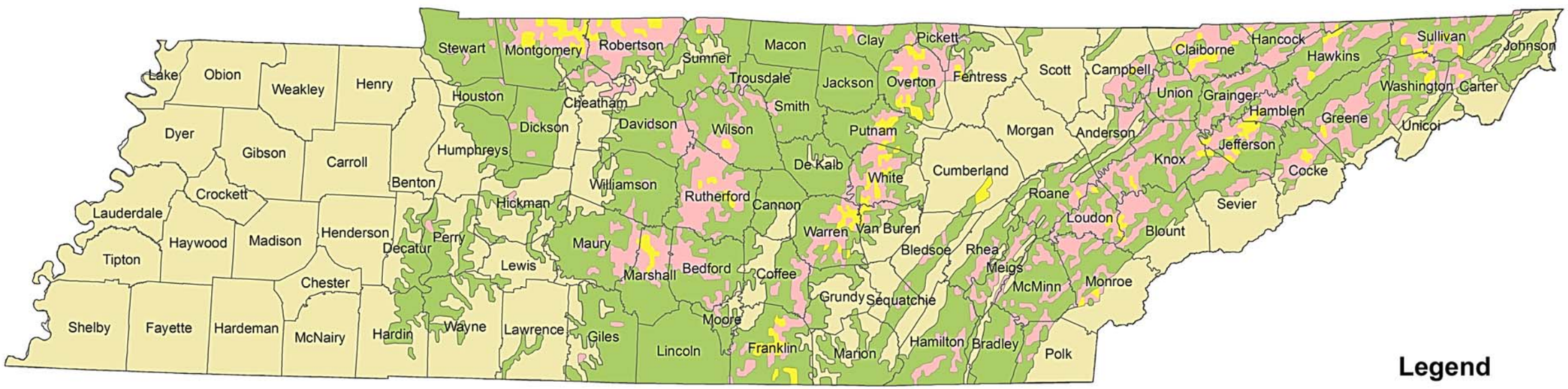
(C) the disclosure of information described in paragraph (2) pursuant to the consent of the agricultural producer or owner of agricultural land.

(5) **CONDITION OF OTHER PROGRAMS.**—The participation of the agricultural producer or owner of agricultural land in, or receipt of any benefit under, any program administered by the Secretary may not be conditioned on the consent of the agricultural producer or owner of agricultural land under paragraph 4(c).

(6) **WAIVER OF PRIVILEGE OR PROTECTION.**—The disclosure of information under paragraph (2) shall not constitute a waiver of any applicable privilege or protection under Federal law, including trade secret protection.

Appendix L

KARST HAZARD ASSESSMENT MAP OF TENNESSEE



Legend

TN Counties

TN_Karst

PER_K

- 0
- < 1
- 1 - 10
- > 10

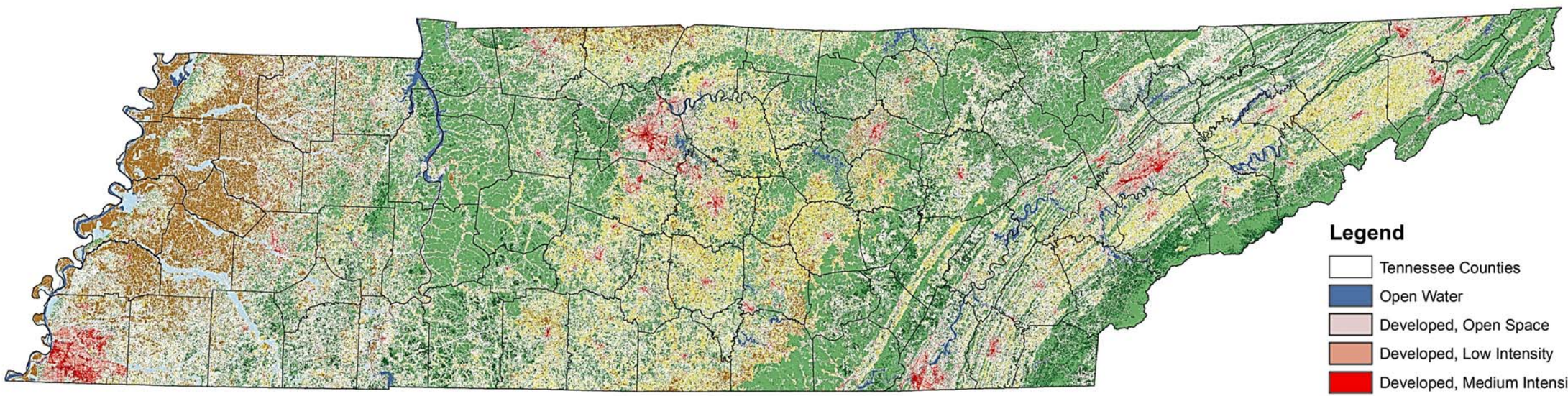
Noncarbonate areas = 0
Carbonate areas with less than 1 percent sinkholes
Carbonate areas with 1 to 10 percent sinkholes
Carbonate areas with greater than 10 percent sinkholes

N

Map data from TDEC, USGS, US Dept of Interior

TN DEPT of AGRICULTURE
May 2, 2014

State of Tennessee with National Land Cover Data Set



Legend

- Tennessee Counties
- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands
- Unclassified/ No Data

N

0 40 80 160 Miles

TDA 5/5/14